

# Exploring attitudes to GM food

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# **Exploring attitudes to GM food**

## ***Final Report***

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# Executive summary

This is a summary of the findings of a study commissioned by the Food Standards Agency (FSA) aimed at understanding public attitudes towards genetically modified (GM) food. The government's overall policy on GM food, set out in 2004, stated that there is no scientific case for a blanket ban on the cultivation of GM crops in the UK, but that proposed uses of GM need to be assessed on a case by case basis<sup>1</sup>. Although GM food is not currently widely available in the UK, in recent years there has been renewed policy interest in GM food<sup>2</sup> and the FSA has recently commissioned several strands of work aimed at understanding current public opinion on the subject. This has included an evidence review on public opinion towards new food technologies<sup>3</sup> and a module of questions focusing on attitudes to food technology in the British Social Attitudes Survey (BSA).

## Research aims and methodology

This qualitative study was designed to build on the findings of previous FSA work and specifically aimed to:

- explore why people hold particular views to GM food;
- better understand how people's attitudes to GM food are formed;
- explore how people weigh up the risks and benefits associated with GM food;
- better understand what causes people to be indifferent to GM food; and,
- explore the circumstances in which people change their views.

These objectives were met using a three stage design. First, 30 **in-depth interviews** were held with BSA survey respondents in two geographical areas to explore what shapes attitudes to GM food. Second, two **deliberative workshops** were held with depth interview participants to further understand what shapes attitudes and the impact of information about GM food. Finally six **follow-up telephone interviews** explored participants' experience of the research process. Purposive sampling ensured diversity in attitudes to GM food as expressed in the BSA survey, and in relation to relevant socio-demographic factors.

## Findings

### Understanding of GM food

Participants fell into two broad categories in terms of their understanding of GM food. Those that were **confident about their level of understanding** described the process of genetic modification in terms of altering DNA of plants or crops for the purpose of society, business and science. They expressed awareness of popular/media images of GM food and recalled strong images of environmental protesters destroying GM crops, while feeling critical towards them. Those that were **less confident about their level of understanding** described genetic modification as a process of altering or modifying food in various ways for the benefit of the consumer. Images of GM food were striking and participants used shocking language such as '*Frankenstein*' food. Associations with the GM process were of unnaturalness, '*playing with nature*' and experimentation. There was convergence between these two positions in terms of understandings of the extent to which GM

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<sup>1</sup> Parliamentary statement made to the House of Commons on GM crops by the Secretary of State for Environment, Food and Rural Affairs, HC Deb, 9 March 2004, cols 1381-4

<sup>2</sup> Cabinet Office Strategy Unit (2008) *Food Matters: Towards a Strategy for the 21<sup>st</sup> Century*, Cabinet Office, London; Defra (2009) *Food Matters: One year on*, available at: <http://www.defra.gov.uk/foodfarm/food/pdf/food-matters-oneyearon090806.pdf>

<sup>3</sup> Brook Lyndhurst (2009), *An evidence review of public attitudes to emerging food technologies*, London. Food Standards Agency, available at [www.food.gov.uk/multimedia/pdfs/emergingfoodtech.pdf](http://www.food.gov.uk/multimedia/pdfs/emergingfoodtech.pdf)

food is being produced and available to buy; a common perspective was that GM was widely available but there was little knowledge about labelling requirements for GM food.

### **Attitudes to GM food**

A wide range of views towards GM food were expressed in the depth interviews and these could be broadly grouped into four sets of attitudes, each including a range of more specific perspectives.

**Positive attitudes** were articulated in terms of the perceived benefits of GM food for society, the perception that the benefits of GM food outweigh the potential risks and trust in the motivations of producers and regulators. A key driver of **negative attitudes** was concern about perceived health and environmental risks and unintended consequences relating to GM food and scepticism about the motivations of producers and regulators of GM food. Participants occupying the 'middle ground' articulated their position on GM food as being neither overall positive nor overall negative. Within this group were two sets of attitudes. Those with **undecided attitudes** presented themselves as unable to form a clear judgement about whether they were positive or negative towards GM food either because of a lack of personal knowledge on the subject, or because of the a lack of evidence about GM food currently available. The second set of attitudes among people holding the middle ground could be defined as **not holding a view on GM food**. Participants holding this position did so either because they perceived that GM food was a 'private' issue for individual consumers rather than a public issue, or because GM food was simply a low priority issue for that individual.

### **Factors that shape attitudes: worldviews and personal circumstances**

Participants' worldviews and personal circumstances interacted to inform and shape their attitudes towards GM food. In particular attitudes towards GM food were driven by two overarching sets of broader viewpoints:

**Broad views towards food and food production** informed negative, positive and neutral attitudes towards GM food. For example, participants articulated that GM food was considered potentially unsafe and harmful or expressed concerns about the use of GM animal feed. This was underpinned by broader attitudes towards food which centred on the quality / healthiness of food, emphasised direct experiences of food production where food was locally sourced, tended to dichotomise food in to 'good' and 'bad' types and saw commercial production processes as having a negative impact on health. For these participants food scares had resulted in lack of trust in the food industry. These viewpoints were commonly expressed by people who had responsibility for providing food for children.

In contrast, middle ground or more positive attitudes towards GM food were related to the perception that the decision to purchase GM food would be driven by pragmatic considerations and the belief that GM food will only be available to eat if it is safe. These attitudes could clearly be understood in the context of broader approaches to food. For these participants food choices were influenced by pragmatic concerns such as cost, time available to buy and prepare food and food shopping facilities. They tended to be less preoccupied by the relationship between food and health and expressed higher degrees of trust in food safety and regulatory systems.

Different **attitudes towards science and technology** were clearly associated with positive or negative attitudes towards GM food. Participants who expressed positive attitudes towards GM food tended to view the process of genetic modification as ordinary and non-threatening and they expressed trust that structures to ensure the appropriate testing and regulation of GM food were in place. They argued against the claim that GM food is unnatural, viewing it as an extension of evolving scientific and agricultural practices. The potential risks of GM food were recognised but it was claimed that these were outweighed by the benefits. These views were **underpinned by a positive view of science**, in which science was perceived to improve the quality of life, and contribute to the progressive advancement and ongoing evolution of human society. From this

perspective risk was an inevitable part of scientific progress and regulators were trusted to ensure that risks were carefully assessed.

In contrast, negative attitudes towards GM food were articulated in terms of lack of confidence in the long-term safety of GM food and concerns about both the quality of GM products and the ethics of the process of genetic modification. These views were clearly underpinned by **sceptical or cautious views of science** more generally. From this perspective, the risks involved in scientific activity were less acceptable and the motives and effectiveness of regulation of new food technologies were questioned. Another facet of this viewpoint was that scientific progress was perceived to be happening too fast without sufficient attention to the ethical consequences that it raises. Finally there was a perception that food and health guidelines were inconsistent, which led to a broader lack of trust in scientists and the regulatory authorities.

### **Factors that shape attitudes: responses to information**

During the workshops, participants were presented with different types and sources of information about GM food. This further revealed what shaped their views, including how they weighed up the associated risks and benefits, and provided evidence on how exposure to information impacted on attitudes.

Participants were given a **presentation by a representative from the Novel Foods division of the FSA** which provided an overview of issues relating to GM food, including the role of the FSA. The questions participants raised after the presentation revealed key concerns about the availability of GM food in the UK, how regulation works and the possible consequences of GM food in relation to food prices, the environment and health. **Responses to this information were mediated by participants' pre-existing views.** Previous positive attitudes and trust in authorities translated in to trust in the FSA expert and the presentation content. Conversely, previously expressed negative or sceptical attitudes translated into scepticism about the objectivity of the FSA expert. The presentation content impacted most on the views of those who were undecided, whose awareness of the potential benefits of GM food increased resulting in more positive views towards GM food.

Participants were also provided with **examples of current uses of GM in food production** and asked to rate the acceptability of these. In forming their judgements, people drew on similar **risks and benefits** as had been discussed previously in the interviews. These included **concerns about environmental and health risks, the potential benefits for developing countries** and whether the **motivations of those developing these applications** would limit the value for developing countries. Responses to this information were again mediated by existing viewpoints. People with a positive attitude towards GM food, who saw GM food as an extension of existing scientific practices, were unfazed by this information. Those who were cynical/ less trusting about the motivations of food producers felt that this information did not address their concerns while those that were trusting were reassured that these foods wouldn't be available unless they were safe. Developing greater awareness of the potential social benefits of GM food was confusing for participants who had previously thought about the issue in terms of the impact on themselves and their family.

Participants were asked to weigh up **different arguments about GM food** from the public domain. This revealed that **health considerations** and **consequences for tackling food shortages** were key factors in the forming of judgements on GM food. The **source of arguments was as important as the content in weighing up arguments**; campaigning environmental groups were perceived to have vested political interests while the food industry was perceived to have vested economic interests. Individual politicians were not trusted but there were mixed views on the

reliability of government sources. There was no consensus on who would constitute a neutral source of information.

### Overall impact on attitudes of taking part in the research

There were two main ways in which attitudes developed during the course of the research. The first involved a **transition towards more positive attitudes**. Among participants who expressed positive attitudes at the outset, there was a perception that the information they had received made them more convinced of their existing positive view. Similarly, those who were more negative/ undecided in the interviews reported that the information led to increased awareness of the benefits of GM food and dispelled their sense of GM as an unknown entity. The second way that attitudes developed involved **no switch in overall attitudes** but a variety of more subtle changes in perspectives on GM food. People who were negative/ undecided in the interviews felt they had still not received enough information to form a judgement; in particular more information was needed about the long-term health risks. Finally, participants expressing positive viewpoints said that, while they remained positive, their view had become more nuanced and incorporated a broader understanding of the potential advantages and disadvantages associated with GM food. Overall, perspectives on GM food from across the attitudinal spectrum became more qualified and nuanced as people had become aware of the complexity of the debates on the subject.

### Methodological implications

There are a number of implications for the design of future research on attitudes to GM food or similar topics. **Engaging people with low levels of interest/ ambivalent views** in research requires clear communication about the aims of the research during recruitment, and practical strategies such as the use of incentives and convenient research times/locations. **Encouraging participation from those with sceptical views** requires transparency about the research purpose, the value of their views and evidence of the robustness of the research. Research design on complex scientific issues needs to ensure **sufficient homogeneity in terms of educational background** among participants but also **diversity in attitudes** in order to generate discussion. Finally deliberative research on complex issues needs to grapple with the tension between **providing balanced information and ensuring that the practical and intellectual demands on research participants are reasonable**. How future researchers respond to these tensions will depend on the specific objectives and context of the research.

### Policy implications

The study found some public **trust in official sources of information and communication**, including the FSA but also a wish to know more about the interests of different sources in the GM food debate. In terms of **information content**, people wanted to know more about the **extent to which GM food is available**; this reflected perceptions that information provided at the workshop about the prevalence of GM food was particularly surprising and useful. In addition further information was requested about the **potential long-term societal and personal impacts**, and the **potential consequences for animal welfare**. **Clear and accessible** information was wanted from **a range of different places**, including in supermarkets. There was a lack of knowledge about how labelling and regulation currently works and a view that the current system is confusing. There was widespread **support for labelling of all GM food products**, including where GM is used as a processing aid or in animal feed. The principles of transparency and consumer choice were clearly a priority for people holding a range of attitudes towards GM foods and this shaped their views on regulation and labelling

# 1 Introduction and background

This report presents the findings of a qualitative study commissioned by the Food Standards Agency (FSA) aimed at understanding public attitudes towards genetically modified (GM) food.

## 1.1 Research and policy context

The government's overall policy on GM food, set out in 2004, stated that there is no scientific case for a blanket ban on the cultivation of GM crops in the UK but that proposed uses of GM need to be assessed on a case by case basis<sup>4</sup>. GM food is not currently widely available in the UK, but in 2008, the publication of "Food Matters" by the Cabinet Office reflected renewed policy interest in the subject and highlighted concern within the food industry about problems with sourcing non-GM animal feed and the potential burden of current regulatory systems<sup>5</sup>. This was followed up this year with the publication of "Food Matters: One year on"<sup>6</sup>, which reported on follow up work by Defra and the FSA<sup>7</sup>.

Regulation of GM food currently happens at EU level. The GM Food and Feed Regulation No. 1829/2003 lays down rules to cover all GM food and animal feed, regardless of the presence of any detectable GM material in the final product. Current EU policy on labelling of GM food states that, if a food contains or consists of genetically modified organisms (GMOs), or contains ingredients produced from GMOs, this must be indicated on the label. For GM products sold 'loose', information must be displayed immediately next to the food to indicate that it is GM. Products produced with GM technology (for example cheese produced with GM enzymes) do not have to be labelled. Products such as meat, milk and eggs from animals fed on GM animal feed also do not need to be labelled<sup>8</sup>.

The FSA plays an important role in protecting consumer interests. In 2003, the Agency contributed to the Government's public debate on GM food by supporting a range of initiatives to independently assess public opinion on the acceptability of GM food and how this relates to consumer choice. These initiatives included a citizens' jury, a schools debate and a GM food video<sup>9</sup>.

The FSA has recently commissioned several strands of work aimed at understanding current public opinion towards new food technologies, including GM food. This qualitative study was designed to build on the findings from two of these strands; an evidence review on public opinion towards new food technologies<sup>10</sup>, and a module of questions focusing on attitudes to food technology included in the 2008 British Social Attitudes Survey (BSA), an annual survey which charts continuity and change in British social, economic, political and moral values. The findings of these two strands of work are summarised below.

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<sup>4</sup> Parliamentary statement made to the House of Commons on GM crops by the Secretary of State for Environment, Food and Rural Affairs, HC Deb, 9 March 2004, cols 1381-4

<sup>5</sup> Cabinet Office Strategy Unit (2008) *Food Matters: Towards a Strategy for the 21<sup>st</sup> Century*, Cabinet Office, London

<sup>6</sup> Defra (2009) *Food Matters: One year on*, available at: <http://www.defra.gov.uk/foodfarm/food/pdf/food-matters-oneyearon090806.pdf>

<sup>7</sup> Defra and FSA (2009) *GM Crops and Foods: Follow-up to the Food Matters Report*, available at: <http://www.defra.gov.uk/environment/quality/gm/crops/documents/foodmatters-defra-fsa-1308.pdf>

<sup>8</sup> [http://www.food.gov.uk/gmfoods/gm/gm\\_labelling](http://www.food.gov.uk/gmfoods/gm/gm_labelling)

<sup>9</sup> <http://www.food.gov.uk/gmdebate/?view=GM+Microsite>

<sup>10</sup> Brook Lyndhurst (2009), *An evidence review of public attitudes to emerging food technologies*, London. Food Standards Agency, available at [www.food.gov.uk/multimedia/pdfs/emergingfoodtech.pdf](http://www.food.gov.uk/multimedia/pdfs/emergingfoodtech.pdf)

## Evidence review findings

The FSA-commissioned evidence review on public attitudes to emerging food technologies, including GM food, reported evidence from international and UK studies. Most of the reviewed data was from one-off quantitative surveys but some qualitative studies were also included.

### Overall attitudes and knowledge

The review reported on overall attitudes and knowledge about GM food among the public. It found that GM food is not a priority issue for most people and that most UK consumers do not have a strong initial interest in the subject. While most people do know what 'GM' stands for, further knowledge and understanding is limited. In the UK, attitudes to GM are most commonly undecided. Among those who are decided, attitudes tend to be negative.

### How attitudes are shaped

A number of drivers of attitudes were identified. The review reported evidence with regard to the perceived risks and benefits of the products themselves. This found that the majority of UK consumers believe GM food is medium risk but due to a lack of perceived benefits, the risks still outweigh the benefits for most.

Existing evidence has explored the role of personal values in shaping attitudes. Several studies found general attitudes to science and technology to be the strongest predictor of attitudes. Other relevant values and attitudes include those towards health and nutrition, to the environment and to social and economic equity. Greater trust in authority is associated with more positive attitudes towards GM food while those who trust activists such as consumer and environmental groups tend to believe the opposite. Studies have also found attitudes to food in general are important predictors of attitudes to GM food; the relationship between concerns about GM food and the purchase of organic food is a recurring theme.

Socio-demographic characteristics also appear to be related to attitudes. Studies consistently find women to be less positive, more concerned, perceive fewer benefits and state they are less likely to eat GM food than men. One explanation given is that women are more likely to be responsible for food at a household level and health risks to the family are an important driver of negative attitudes to GM food. The evidence about the effects of other socio-demographic characteristics is less firm.

### The process of attitude formation

The review also examined evidence about the process of attitude formation and reported that this is complex and varied. Previous studies have distinguished between top-down attitude formation, which is where the formation of attitudes towards GM food and other new food technologies is based on existing higher level viewpoints, and bottom-up attitude formation where attitudes are formed based on specific knowledge of the product. Studies have found that top down attitudes play more of a role in attitude formation in relation to GM food than bottom-up attitudes.

It has also been argued that those with stronger pro or anti views are more likely to base this on more subjective knowledge, values or ideologies while those who are undecided are more likely to focus on the perceived utility of GM products.

Research has found that a perceived lack of knowledge about the subject area causes the majority of people in a survey situation to give an emotional or affective response to the idea of GM food rather than a reasoned or thought out position. It has been argued that this inclines people to view GM food more negatively.

The evidence was mixed about the effects of existing and new knowledge on attitudes to GM food. Some studies have found that increased knowledge is associated with more positive views. One consequence of low knowledge is that social norms are a key factor in shaping attitudes to GM food.

Finally, the evidence suggested that people's attitudes and the choices they say they will make may not accurately relate to what people do in reality when faced with a choice. It has been argued that a key reason for this is that in reality at the point of purchase, price, accessibility, convenience, taste and quality become more significant factors.

#### Information sources, labelling and regulation

Studies have identified the media, government and industry (particularly biotechnology companies) as the least trusted sources of information. In general consumers are unsure who to trust and tend to use sources that mean something in their personal lives such as friends and family.

Research has also found that there is generalised support for higher regulation and labelling is considered an important tool for building trust by increasing feelings of control and choice. There is general support for clear labelling systems.

#### Gaps identified in the review

The review identified a number of gaps in the existing body of evidence, which the primary research conducted for this qualitative study aimed to address. Gaps identified included:

- data on how attitudes change over time;
- evidence that differentiates populations based on attitudes and then examines the drivers of difference;
- further examination of how people reach their viewpoints; and,
- examining the source of indifference to GM food in more detail.

The review particularly emphasised the relationship between rational, scientific, factual, evidence-based perceptions and understandings, versus emotional, irrational, ethical, values-based perceptions, and the need for research to adopt a neutral stance in relation to this.

## **BSA headline findings**

The FSA has also recently commissioned a module of questions on the British Social Attitudes Survey (BSA) looking at attitudes to food technologies, including a specific focus on GM food.

The results for the 2008 survey indicated that a substantial proportion of people are neither positive nor negative towards GM food; up to 4 in 10 people neither agreed nor disagreed with a set of four attitude statements about GM food. When comparing how people responded to the question 'On balance the advantages of genetically modified (GM) foods outweigh any dangers, there were some respondents who could be classed as 'pro' GM (17%) and some as 'anti' GM (31%), the majority answered neither agree nor disagree (39%) or don't know/ didn't answer (14%).

These findings represent a change in attitudes over time and indicate that people have become less opposed to GM food since 1999. Disagreement that the advantages of GM food outweigh the dangers has decreased by 26 percentage points since 1999. However, agreement has not increased to the same extent, rather a greater proportion of people now take the middle ground.

## 1.2 Study aims and objectives

This study aimed to fill gaps identified in the evidence review commissioned by the FSA and to build on the findings of the BSA module on GM food.

The specific objectives of the study were to:

- explore why people hold particular views to GM food;
- better understand how people's attitudes to GM food are formed;
- explore how people weigh up the risks and benefits associated with GM food;
- better understand what causes people to be indifferent to GM food; and,
- explore the circumstances in which people change their views.

## 1.3 Methodology

### Research design

In order to address the objectives set out above, the research was designed to include three stages:

#### Stage 1: Depth interviews with BSA respondents

Depth interviews were held with thirty respondents who had taken part in the BSA survey and agreed to be re-contacted. Participants were drawn from two geographical areas. The purpose of these interviews were to explore individual participants' personal views on GM food, to explore why they have those views and to understand what participants considered to be the risks and benefits of GM food.

The interviews lasted approximately one hour and were carried out using a topic guide, which can be found in Appendix A. The purpose of the topic guide was to help focus and shape the discussion, while allowing each individual to generate and discuss relevant issues as they arose in an open way. Participants were encouraged to discuss their knowledge and attitudes towards GM food spontaneously. Following this, interviewers introduced a basic definition of GM food, some possible applications of GM technology, and encouraged participants to reflect in a methodical way on the potential risks and benefits. The broad topics discussed included:

- attitudes and behaviour to food in general;
- knowledge of GM food;
- attitudes towards GM food, including interest in GM, perceived risks and benefits and attitudes toward different uses of GM; and,
- views on further information about GM food.

#### Stage 2: Deliberative workshops with interview participants

Two deliberative workshops were held, one in each geographical area, to which all interview participants were invited to attend. Twenty interview participants took part in the deliberative workshop stage of the research. The purpose of these workshops was to better understand the factors that shape people's attitudes to GM food, to see how attitudes develop when presented with a range of information and a group dynamic, to further explore why people are indifferent to GM food and to explore the circumstances in which people change their views.

Deliberative workshops differ to focus groups in that they are held over a longer period of time and usually with a larger number of participants. The advantages of this format are that the additional

time allows for a range of topics to be discussed and presented in a variety of formats. The longer length also gives greater opportunity for participants to engage with the subject and make their views heard.

The deliberative workshops were facilitated by moderators, using a topic guide and materials which can be found in Appendix B. All the participants were given information about the objectives of the workshops and about how the results from the workshop would be used. The workshops included a range of large and small group exercises which are outlined below:

- warm up exercise where participants were asked to physically position themselves in a line according to their attitude toward GM food;
- presentation and large group Q&A on providing an overview of GM food by a representative from the FSA (see Appendix C);
- small group exercise exploring different current uses of genetic modification in food production (see Appendix D);
- small group exercise exploring arguments/ sources of arguments about the potential benefits and risks of GM food (see Appendix E); and,
- large group Q&A with representative from the FSA to discuss issues arising.

#### Stage 3: Methodologically focused follow up interviews with workshop participants

Follow-up interviews were conducted by phone with six workshop participants. The purpose of these follow-up interviews was to explore how participants found the process of taking part in the workshop both in terms of the impact they felt it had on their views and as a methodology to inform future FSA research design.

The interviews were carried out by telephone and lasted approximately 30 minutes. They were conducted using a topic guide which can be found in Appendix F. In order to ensure participants were comfortable in sharing their views about taking part in the interviews and workshops in an open way, a researcher who had not been involved in the previous stages of the research undertook these follow-up interviews.

All interviews and workshops were digitally recorded and transcribed verbatim for analysis. The anonymised interview transcripts will be archived at the Economic and Social Data Service qualitative data archive (ESDS Qualidata)<sup>11</sup>.

## **Sampling and recruitment**

Purposive sampling (Ritchie & Lewis, 2003) was used in order to generate the sample. Purposive sampling aims to capture as wide a range of views and experiences as possible, rather than to be statistically representative. As such, key criteria are chosen that relate to the research objectives and are likely to be associated with differing views and experiences.

A primary sampling criteria was participants' attitudes towards GM food, as expressed in responses in the BSA survey. The BSA survey question 'On balance, the advantages of GM food outweigh any dangers' was taken as a measure of support or opposition to GM food. The breakdown in attitudes for this BSA survey question is provided in Table 1 below.

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<sup>11</sup> <http://www.esds.ac.uk/qualidata/>

**Table 1: BSA survey results for GM food benefits/dangers statement**

	Strongly agree / agree	Neither agree nor disagree	Disagree / strongly disagree	Don't know/didn't answer
On balance, the advantages of genetically modified (GM) foods outweigh any dangers	17%	39%	31%	14%

Participants' answers to this question were split in to the three attitudinal groups outlined below. This involved merging the neither agree nor disagree respondents with the 'don't know/didn't answer' respondents, to ensure that the views of people who said that they 'don't know' or did not answer were also captured.

- a.) Strongly agree/ agree
- b.) Neither agree nor disagree/ don't know
- c.) Strongly disagree/ disagree

Quotas were set in order to include an equal number of participants for each of these attitudinal groups. The rationale for this was that it enabled us to explore the factors underpinning the broad range of attitudes that exist in the general population.

In addition to these three attitudinal groups, the age and gender of participants were also primary sampling criteria. Quotas were also set in order to achieve diversity in relation to location (rural or urban), employment status, parental status, and whether participants considered themselves to hold religious beliefs. These criteria were chosen because the existing literature suggests that they might be pertinent in understanding attitudes towards GM food (see section 2.1 above)

The research took place in two geographical areas. These were selected on the basis of analysis of BSA data, which suggested, outside London, these two areas offered the best clustering of responses to the BSA survey question about GM food in order to achieve the desired sample composition, and facilitate the convening of deliberate workshops.

All participants recruited to take part in the depth interviews were also invited to take part in the deliberative workshops. Twelve participants took part in the workshop in Area 1 and eight took part in the workshop in Area 2. A broad range of attitudes towards GM food, expressed in the interview, were represented at the workshops and all the key sampling criteria were represented across the two workshops. Table 2 provides a breakdown of the sample profile for the interviews and workshops in each area.

**Table 2: Sample profile for Stage 1 (interviews) and Stage 2 (deliberative workshops)**

Sample characteristics	Interview sample – Area 1	Interview sample – Area 2	Interview sample - Total	Workshop sample - Area 1	Workshop sample - Area 2	Workshop sample - Total
<i>Attitude to GM</i>						
- Agree	5	3	<b>8</b>	5	1	<b>6</b>
- Disagree	4	7	<b>11</b>	2	4	<b>6</b>
- Neither/can't choose	6	5	<b>11</b>	5	3	<b>8</b>
<i>Gender</i>						
- Male	6	8	<b>14</b>	5	4	<b>9</b>
- Female	9	7	<b>16</b>	7	4	<b>11</b>
<i>Age</i>						
- 18 – 25	1	2	<b>3</b>	1	1	<b>2</b>
- 26 – 44	6	6	<b>12</b>	3	4	<b>7</b>
- 45 – 64	6	6	<b>12</b>	6	3	<b>9</b>
- 65+	2	1	<b>3</b>	2	-	<b>2</b>
<i>Rural/urban</i>						
- Consider where living 'rural'	8	2	<b>10</b>	8	1	<b>9</b>
<i>Daytime activity</i>						
- In employment	8	8	<b>16</b>	5	7	<b>12</b>
- Not in employment	7	7	<b>14</b>	7	1	<b>8</b>
<i>Parental status</i>						
- Children living in household	5	5	<b>10</b>	3	2	<b>5</b>
- Children left home	7	4	<b>11</b>	7	2	<b>9</b>
- No children	3	6	<b>9</b>	2	4	<b>6</b>
<i>Religiosity</i>						
- Holds religious beliefs	8	7	<b>15</b>	6	5	<b>11</b>
- Does not hold religious beliefs	7	5	<b>13</b>	6	1	<b>7</b>
- Does not know / unsure	-	3	<b>3</b>	-	1	<b>1</b>
<b>Total</b>	<b>15</b>	<b>15</b>	<b>30</b>	<b>12</b>	<b>8</b>	<b>20</b>

Participants in the follow-up interviews were purposively sampled to ensure diversity across the key primary sampling criteria, BSA attitude, gender and age. They were also sampled to include people who, at the end of the workshop, reported different impacts of the research on their overall attitudes (including that their overall views had changed, become stronger or remained the same).

Recruitment was carried out by NatCen's in-house Telephone Unit using a screening questionnaire which is included in Appendix H. The screening questionnaire collected information about participants to confirm demographic information collected as part of BSA and to enable the quotas set to be filled. At this stage potential participants were also told about the deliberative workshop and consent was sought for their involvement in that too. Consent for the workshop was then requested again at the end of the interview. Consent was also sought for anonymised verbatim transcripts of the depth interviews to be archived at the UK Data Archive (ESDS Qualidata).

Participants were offered £25 for attending the interview alone and £75 plus travel expenses for attending the interview and workshop. A £10 voucher was provided as thanks for participation in the telephone follow-up interviews.

## Data management and analysis

The data from this study were analysed with the aid of Framework (Ritchie *et al.*, 2003), a systematic approach to qualitative data management that was developed by NatCen and is now widely used in social policy research (Pope *et al.*, 2006). Framework involves a number of stages. First, the key topics and issues which emerge from the research objectives and the data are identified through familiarisation with the transcripts. The initial analytical framework is then drawn up and a series of thematic charts or matrices are set up, each relating to a different thematic issue. The columns in each matrix represent the key sub-themes or topics whilst the rows represent individual participants. Data from verbatim transcripts of each interview or workshop are summarised into the appropriate cell. In this way, the data are ordered in a systematic way that is grounded in participants' own accounts, yet oriented to the research objectives.

This approach was supported by a bespoke software package, *FrameWork*, also developed by NatCen. The software enabled a flexible approach to the creation of the matrices, allowing new columns or 'themes' to be added during the process of data management. This software also enables the summarised data to be hyperlinked to the verbatim text in the transcript so that it is possible to move back and forth from the more abstracted summary to the original data, depending on the level of analysis and detail required. Finally, the cases and themes that were displayed could be chosen with complete flexibility, easily allowing cases to be ordered, compared and contrasted. The Framework approach and the *FrameWork* software meant that each part of every transcript that was relevant to a particular theme was noted, ordered and instantly accessible.

The final stage of analysis involved working through the charted data in detail, drawing out the range of views and responses to information, identifying similarities and differences, developing and testing hypotheses, and interrogating the data to seek to explain emergent patterns and findings.

### 1.4 Report outline

The rest of this report presents findings from the interviews, workshops and follow-up telephone interviews. **Chapter 2** provides a detailed map of participants' initial understandings of, and attitudes towards, GM food. **Chapter 3** explores the ways in which participants' worldviews and personal circumstances informed their attitudes towards GM food. **Chapter 4** looks at how exposure to information influences and interacts with attitudes towards GM food. **Chapter 5** draws out methodological implications of this study for future research. Finally, **Chapter 6** brings together the evidence from the preceding chapters to draw overarching conclusions and implications for future policy and communications on GM food.

Throughout the report, verbatim quotations are used to illustrate the findings. Quotes are drawn from across the sample. The report deliberately avoids giving numerical findings, since qualitative research cannot support numerical analysis. This is because purposive sampling seeks to achieve range and diversity among sample members rather than to build a statistically representative sample. As a result, qualitative research provides in-depth insight into the range of phenomena, their social context and the associations between issues.

This project sought to understand participants existing levels of knowledge and attitudes towards GM food and how those attitudes change when presented with a range of information. Therefore, throughout this report it is indicated where participants were raising issues spontaneously or in response to stimulus provided by researchers. This methodological issue is also discussed in more detail in Chapter 5.

## 2 Knowledge about and attitudes towards GM food

This chapter provides a detailed map of participants' understanding of, and attitudes towards, GM food, as reported during the in-depth interview stage of this research. The purpose of the interviews was to capture individual participants' personal views on GM food, to explore why they report holding those views, and understand what they consider to be the risks and benefits of GM food.

The chapter begins by presenting the range of knowledge and understanding that existed among the sample in relation to GM food. It then considers participants' understanding of the extent and availability of GM food. Finally, it discusses people's general levels of interest in and attitudes towards GM food.

### 2.1 Understanding of the process and purpose of genetic modification in food production

This section looks at the initial response of participants when asked what they understood GM to be. While participants discussed their understanding of GM further as the interview progressed, it is illuminating to see participants' first reaction to the introduction of GM, and their approach in answering it, as this was usually related to their general attitude towards it.

While participants commonly and explicitly asserted that they did not know very much about the subject of genetic modification and GM food, there were clear differences in terms of people's knowledge levels and understanding, and their confidence in what they felt they knew about GM food. There were two broad positions in terms of level of knowledge and understanding about GM food that participants' could be characterised by, as outlined below

#### **Confident about level of knowledge and understanding**

This position was associated with greater confidence among participants about their level of knowledge and understanding in relation to genetic modification and GM food. While 'confident' participants' answers were variable in terms of length and detail provided, they reported understanding the process of genetic modification at least to some extent, and were able to articulate it as involving altering DNA or genes of plants or crops. It was notable that they were unlikely to associate GM with animals. They cited a wide range of sources for their knowledge and understanding of GM food, which ranged from news media, education (including higher education), to scientific periodicals.

There were three key perspectives on the purpose of GM food within this position. One view was that GM food was intended primarily to increase or safeguard food supplies. For example, participants described GM food as a means of tackling hunger and starvation in developing countries. This increase in food production was also viewed as being of benefit to UK society. A variety of ways in which the development of GM crops might achieve this was described by participants, including the use of GM to make crops disease resistant, to allow crops to survive in different weather/climatic conditions, to reduce the need for pesticides and fertilisers, to grow crops more quickly, to increase yields and to make crops last longer before perishing.

*“Genetically modified to me means that the genetic pattern, genetic structure of the food has been altered, synthetically, in a laboratory, to make the food more resistant to diseases, more resistant - or more tolerant of certain weather conditions.”*

A second perspective focused on the relationship between GM food and business, and emphasised profit as the primary purpose, or that profit was an important by-product of developing this technology. A third perspective suggested that GM food was simply the outcome of scientific progress and that its development was a result of a desire to better understand the natural world.

The types of imagery and language used by participants who were more confident about their knowledge and understanding related to '*scientists*' and the scientific laboratory environment in which GM processes might be developed and undertaken. However, participants also recalled strong imagery relating to protesters wearing protective clothing destroying GM crops. Where participants recalled this image, they described feeling critical of these protesters.

### **Less confident about level of knowledge and understanding**

The second position was associated with a lack of confidence about levels of knowledge and understanding of GM food. People who were less confident appeared to be unsure of their explanations and this was evident in their use of phrases such as '*I suppose*', '*If I am right*', and '*I guess*'. A lack of confidence in the subject was also demonstrated through the phrasing of answers as questions reflected back at the interviewer.

Participants who were less confident generally understood genetic modification to involve **altering or modifying food** (including plants, animals and food products) through the use of radiation or addition of chemicals (for example, monosodium glutamate (MSG) or water). They sometimes described genetic modification as involving transferring genes from one product to another, but did not usually give an account of the process and often conflated it with other technologies such as cloning. They also described a narrower range of sources of information compared to participants who were more confident, and focused mainly on information obtained from the news or friends and family.

The purpose of GM food was often viewed from the perspective of the consumer. It was argued that the purpose of GM in food production was to appeal to consumer demand for perfection, for appealing and consistent products, and that there was the potential to grow things to order. It was suggested that GM fruit and vegetables could benefit consumers by being bigger, juicier and lasting longer without preservatives. The point was also made that GM food might result in a reduction of food prices.

In terms of language and imagery, less confident participants focused on GM food as being '*unnatural*' and depicted the process of GM as an activity of play or experimentation. The language used included terms such as '*playing*', '*messing*' or '*toying*' with food by '*injecting*' it with chemicals or '*pumping*' water into it.

The instinctive images and language that less confident participants said they associated with GM products were often striking. They ranged from the evocation of something which is shocking or scary to something which is aesthetically appealing. A common association made by people who were less confident was between GM food and '*Frankenstein*' food, through the use of terms such as '*monsters*' and '*freaks*'. More specific accounts of what they imagined GM food to look like were provided by participants. A key theme was that GM food would look '*artificial*' or like '*rubber*'. In contrast it was also suggested that GM foods would look aesthetically attractive in an extreme way, for example in being '*brightly coloured*' or appearing very large and juicy. Participants found the

idea that foods would appear very aesthetically appealing was itself off-putting. Again, this was related to the perceived unnaturalness of GM food.

*“It just means something’s been altered in the food to make it more appealing and to probably make it bigger and just more appealing colouring and all that. One of the wonderful chemicals or funny numbery things - I don’t know - they put chemicals of some sort in to the foods. Basically, something that shouldn’t be there naturally is going in.”*

Participants who expressed these more dramatic instinctive associations with GM food were more or less reflective about media influence on their instinctive reactions. Participants’ instinctive response was not always consistent with their more developed responses when probed by the interviewer. For example, participants within this position said that, while the term GM food made them instinctively think of particular striking language or images, they did not necessarily think that these images were accurate. Rather they felt that these were the images that had been communicated to them by the media and might therefore be distorted or exaggerated.

## **2.2 Understanding of the extent of genetic modification in food production**

While participants held one or other of the two positions outlined above in terms of confidence in their understanding of the process and purpose of GM in food production, there was a degree of convergence between these two positions in terms of people’s understanding of the extent to which GM food is being produced and available to buy.

A common perspective among participants was that it was ‘*very likely*’ that they were eating GM food, or that they ‘*would not be surprised*’ if they had eaten GM food. Participants also stated that GM food was probably more prevalent than they realised. However, participants felt that they would be unaware whether or not they were consuming GM food. Participants were unlikely to check if food was labelled as GM or not, and it appeared that the use of ‘non-GM’ and ‘GM-free’ in food labelling was a source of confusion because there was uncertainty about whether or not foods without these labels contain GM material. People were generally unsure about whether there was a requirement for GM food to be labelled.

Other views expressed by participants were that it was unlikely that GM food was being consumed, or that GM food had been available in the past, but was not available now. For example, participants reported that they were simply guessing that GM food was not available because they lacked knowledge, or had ‘*no clue*’ about the availability of GM food. However, there were participants who had a more detailed understanding of regulation in the UK and Europe, and were aware that GM crops were not being grown in the UK and/or Europe for commercial purposes.

## **2.3 Attitudes towards GM food**

During the in-depth interview participants were asked to describe their attitude towards GM food. There was a wide range of attitudes towards GM food, ranging from broadly negative to broadly positive. This range encompassed attitudes falling into the ‘middle ground’, including attitudes which were undecided, and not having a view. Attitudes were strongly associated with levels of understanding and knowledge about the process, purpose and extent of genetic modification in food production, as outlined in sections 2.1 and 2.2 above. A summary description of these different attitudes is included in Figure 1 at the end of this section.

### **Negative attitudes**

Participants who described themselves as holding negative views about GM food included both people who felt very strongly opposed to GM food, as well as people who described themselves as

adopting a cautious attitude. Varied and often contradictory views about GM food were expressed by participants with both these attitudes, and this was sometimes underpinned by a lack of confidence in their level of understanding of the process and purpose of GM in food production.

A key area of concern for these participants relates to the unknown consequences of genetic modification in food production. Risks to human health, animal health and welfare and environmental risks were commonly mentioned. Concern about the impact of GM processes on animals and the environment were both ethical and practical. Participants raised ethical concerns about whether it was right to expose animals to potential health risks, either in relation to modifying animals or feeding them GM products. Broader concerns about the potential impact of growing GM products on wildlife and ecosystems were also expressed. GM food was seen as potentially leading to a reduction in diversity of plants, insects and animals, with negative ecological consequences. There was also a concern that the drive to make profits from the development of GM technology might override adequate risk assessment in relation to health and the environment.

Other perspectives among those more strongly opposed included the view that GM technology involves '*meddling*' with the natural order of things, and that humans should avoid '*messing*' with nature and altering the genetic makeup of organisms. Inappropriate use of the technology, for example to '*pander*' to consumer demand for more aesthetically appealing food, was also mentioned. Finally, participants also felt that GM food might be lower quality than non-GM food (see Chapter 3 for an account of how participants defined food 'quality').

Participants who expressed more strongly opposed attitudes towards GM food focused on potential health implications related to ingesting GM food, and were often less concerned about other applications of the technology (for example its use in fuel, clothing or medicine). Interest in the subject was centred around wanting to know more about the potential health impacts which could affect people on a personal level. Those with cautious attitudes often mentioned that there was insufficient testing or evidence relating to the safety or environmental impact of GM food. Those who felt less strongly were more likely to mention concerns about the quality of GM food.

*"They're just really out to make money. They're putting all these additives in just to make the things go further, you get more for, more for what they're putting in, and we're actually getting less for what we're paying."*

It was interesting that despite their opposition or caution in relation to GM food, people with negative attitudes continued to emphasise the importance of consumer choice. For example, a strong theme was that, while the development of GM food may entail unknown consequences or risks, it should still be available to buy if it is regulated. There was also acknowledgement that pragmatism might outweigh their concerns when deciding whether or not to buy GM food, for example if GM food were cheaper than non-GM food.

## **Positive attitudes**

A range of views, from strongly supportive to cautiously positive, were expressed by participants who described themselves as positive towards GM food. People with positive attitudes were more confident about their level of understanding of the process and purpose of genetic modification.

A supportive attitude towards GM food was associated with a strong focus on the potential benefits for society. A key argument was that GM food is needed in order to increase food production, in response to food shortages, population growth and climate change. The potential benefits to developing countries were emphasised. Participants also referred spontaneously to potential health

benefits for future generations and the possible environmental benefits of being able to grow crops without using pesticides.

When discussing these views, participants emphasised the importance of weighing up risks and benefits. One perspective was that there are always risks in relation to food and that as long as GM food is developed with sufficient regulation to ensure that these risks are managed, the benefits are likely to outweigh the risks. Participants were consequently sometimes very critical of those who were instinctively opposed to GM food because it constituted the unknown. They suggested that people should develop views on the basis of evidence-based knowledge and criticised scaremongering.

*“I get very, very annoyed at people who are very rigid about one specific aspect of life, you know, say like GM and they start destroying, you know, test crops and all that sort of stuff. That type of thing gets you nowhere. You need to look at the whole, wide picture, right, and see what the benefits are to mankind and the benefits to yourself right across the sort of range in that respect, you know.”*

Overall participants who were positive about GM food focused less on the personal benefits than the implications for wider society. Those who were strongly positive towards GM food framed their interest in the subject in the context of a broader interest in science and technology and an interest in social issues. However, participants who felt less strongly about the issue said that they would describe themselves as positive towards GM food in the sense that, if it cost less than other food, they would choose to buy it.

Participants expressed views that, while positive about the potential of GM food, were also cautious about the practical use of the technology. This argument was made in relation to a number of areas. First, there was concern that the long-term health risks should be assessed and evidence provided about these. Second, it was argued that the technology needs to be developed for the right reasons and if motivated solely by profit it might be more likely to have negative consequences. However, these participants did express trust and optimism about the motivations of businesses and the role of regulatory authorities. For example, one participant suggested that those developing GM technologies would need to demonstrate the potential benefits of the technologies in order to be commercially successful. Another suggested that, as long as GM food was produced within the legal parameters set out by the authorities, they would buy it.

It is worth noting that among participants who were broadly positive about GM food, there were similar ethical concerns in relation to animals as expressed by participants who were broadly negative towards GM food. These participants explained their different views on the use of genetic modification in relation to animals as opposed to crops and vegetables in terms of their opposition to the manipulation of animals by humans for their own ‘selfish’ ends.

## **The ‘middle ground’**

The position of being neither positive or negative towards GM food incorporated a broad range of more subtle differences in attitudes and individuals were not consistent in the reasons that they gave for taking this middle ground. A distinction can be made between views that were undecided and not holding a view. Undecided views were those where the participant presented themselves as not *currently* able to form a clear judgement about whether they were positive or negative toward GM food. In contrast a ‘no view’ position was held by participants who explicitly said that they did not hold any opinion on the subject.

## **Undecided about GM food**

For those participants who said that were not currently able to form a judgement on the subject, a key reason cited was lack of knowledge about GM food. There were two perspectives on the reason for this lack of knowledge; one perspective was that participants were personally not well informed about the issue because of their personal interests or circumstances. However, a second perspective emerged in which participants understood their own lack of knowledge as a reflection of the lack of evidence about GM food currently available.

There were also different perspectives on the kind of information that was lacking. It was argued that more evidence was needed before individuals could assess the risks and benefits of GM food or form an opinion. A contrasting argument was made by participants who focused on their lack of knowledge about the purpose of GM food, and said that they could not form an opinion on the subject without a greater sense of the objectives behind the development of GM technology

*“I don’t really know anything about it so there’s no point in me trying to put a point over on it because I really don’t know why they’d be doing it.”*

The issue of the motivations of those developing GM food was also raised by participants with undecided attitudes, with the implication being that while the technology itself might be useful, whether it is a positive thing or not depends on how it is used. It was argued that it is not predetermined whether the technology will be used for good or bad purposes and judgement should be withheld until it is possible to see what happens in practice.

Participants who expressed undecided viewpoints had different feelings about their lack of opinion and about whether they would like to know more on the subject. Participants stated explicitly that they would like to know more and that if they had greater knowledge of the evidence they would be able to form an opinion. However, a contrasting perspective was expressed by participants who felt that they would like to know more only if GM food is going to affect their daily life.

## **Not holding a view on GM food**

A key perception among participants who said that they did not hold an opinion on the subject of GM food was that GM food is primarily an issue of individual consumer choice. For these participants it was important that information about GM food is provided so that each individual can make up their own mind. Prioritisation of the principle of individual choice appeared to be a driver of this viewpoint; participants stated that they were unable to say that they were positive or negative towards GM food because they felt that it was not their place to judge other people’s choices. Participants described their attitude as neutral on this basis, while also saying that they would not eat GM food personally because they thought it would be less fresh and lower quality in comparison with non-GM food or because of concern about potential health risks.

*“I think, as I say, people need to be given an informed choice, and as long as there’s plenty of, of information to make your own decision then I don’t think it’s a problem.”*

A broader sense of trust and optimism in the way that society functions was highlighted by participants who felt that they didn’t hold an opinion about GM food. This viewpoint was articulated by participants who assumed that they had already eaten GM food and felt that because it had not caused them, or others, any harm so far, that it was probably safe. They also felt government and supermarkets would not allow GM food to be sold if it was unsafe. However, participants adopting an alternative had a more fatalist attitude, believing that the development of GM technology is inevitable, and therefore the consequences are unavoidable.

*"[I'm] a little worried about it [GM food], 'cause things [are] being altered... although life's like that now... things are...being changed.... even in people... Everything's... not as it originally was."*

Another reason for not holding an opinion on GM foods was indifference towards the subject; these participants explicitly said that they felt that the issue was low priority compared to other issues and their lack of opinion did not concern them. These participants also expressed a lack of desire to find out more about the subject. One reason why they did not want to find out more was because they felt that the issue is too complex and overwhelming to grapple with, or that if they were to find out more, it might make them feel more negatively about the subject:

*"It's one of these things. You don't know whether you'd be scared to know more about it, whether it would put you off this, that and the next thing. Sometimes if you're living in a wee bit of ignorance, you can just carry on with your life and it doesn't worry you."*

This section has mapped the range of perceived benefits and risks that were associated with different attitudes towards GM food and were explored in the interviews. Subsequent discussions in response to information provided during the deliberative workshops further revealed which risks and benefits associated with GM food carried most weight for participants in shaping their overall views (see Chapter 4).

#### **Figure 1: Summary of attitudinal perspectives on GM food**

**Negative attitudes:** Key driver of attitudes is concern about the perceived risks associated with GM food and scepticism about the motivations of producers and regulators of GM food.

**Positive attitudes:** Key driver of attitudes are the perceived benefits of GM food for society, perception that benefits outweigh potential risks and trust in the motivations of producers and regulators.

**Undecided attitudes:** Unable to currently form a judgement on whether they feel positively or negatively about GM food. Underpinned by a perceived lack of evidence or personal knowledge on the subject.

**Not holding a view on GM:** Explicit about not holding an opinion on the subject. Attitudes underpinned by various factors, for example, trust in the existing functioning of society or fatalism about the development of technology This may be driven by the belief that the subject is a private matter of individual consumer choice rather than a public issue. It can also reflect indifference towards the issue - the perception that the subject was a low priority or that the subject is too complex to grapple with.

## 3 Factors that shape attitudes: worldviews and personal circumstances

This chapter explores the ways in which participants' worldviews and personal circumstances informed and shaped their attitudes towards GM food. It draws on data from the in-depth interviews and examines what the key factors underpinning attitudes towards GM food are and explores the interaction of factors in determining attitudes.

Attitudes towards GM food were driven by two overarching sets of attitudes. These were:

- attitudes towards food and food production generally; and,
- stances towards science and technology.

This chapter discusses the different ways people reported responding to these issues, and how their responses appeared to underpin or were related to their attitudes towards GM food.

### 3.1 Attitudes towards food and food production generally

In this section people's attitudes towards food and food production generally are explored, and the ways in which these attitudes influence their views of GM food are considered. Attitudes are considered in relation to how people make food choices and the role that personal circumstances plays in the decision-making process. A key aspect of people's attitudes to food and food production is their conceptualisation of the relationship between food and health, and this is discussed separately below.

#### Factors underpinning food choices

There are a range of factors that people take into consideration when deciding what to eat, and these factors also seemed to underpin people's attitudes towards GM food. There were two key components of attitudes towards food and food choices; notions of what constitutes good quality food, counter-balanced by pragmatic considerations.

##### Good quality food

The definitions of good quality food offered by participants had the following aspects:

- the freshness of food (especially fruit and vegetables, meat and fish) which were contrasted with frozen food;
- the naturalness of food (for example, raw ingredients viewed as superior to processed convenience food products, containing artificial additives, preservatives, or added salt and sugar); and,
- the healthiness of food; this was connected to the above two factors in that fresh and unprocessed food was valued highly because it was considered healthier, but was also related to concerns about fat content and/or the nutritional value of food and its impact on health.

The stress that people placed on these different elements appeared to be intimately tied up with their direct experiences of food production. In particular, when people had grown up in close proximity to food production, and seen first hand where food came from, they placed considerable stress on these indicators of quality. For example if people had been brought up in families that grew their own fruit and vegetables they recalled how fresh and tasty such home grown produce was. Participants who had these food memories were likely to articulate the opinion that the quality

of food had been better in previous times; that there had been a *'golden age'* of food production where food had been tastier, fresher, healthier and more *'natural'*. They used these recollections as a benchmark against which the quality of food available to them was judged. These participants viewed food in dichotomous terms, and certain food types were held in higher esteem in comparison to others; specifically, organic, natural, locally sourced, seasonal produce was seen in stark contrast to processed, *'unnatural'* food that had travelled long distances.

The dichotomy of *'good'* and *'bad'* food types was also associated with more negative attitudes towards GM food with the perceived unnaturalness of GM food being emphasised, and GM food being grouped with the *'bad'* food types.

Those without these direct experiences of food production did not place the same degree of weight on the above indicators of quality. Whilst they might still consider the overall quality of food, particularly the healthiness of food, to be important they did not subscribe to such a dichotomous outlook on food and have such fixed views about the type of food they wanted to consume. For example they talked about the importance of eating five portions of fruit and vegetables a day and how doing so was important in terms of trying to be as healthy as possible, but not in terms of how the fruit should be organic produce that was locally sourced as mentioned by those with direct experiences.

#### Pragmatic considerations

In making food choices people took factors other than the different dimensions of the quality of food into consideration:

- The cost of food was strongly linked with the quality of food. Participants perceived that food that they considered to be better quality and aspired to buy, such as fresh, organic produce, was more expensive than other lower quality food. The outcome of this was that price moderated the degree to which people were able to select food on the basis of quality alone, for example, selecting non-organic fruit and vegetables rather than organic, or buying frozen food rather than fresh food. This pragmatic budget driven approach to food selection was found particularly amongst those with responsibility for feeding others, such as parents, and among those with more limited budgets for other reasons, such as employment status (for example, being a student, retired or unemployed).
- The time that people had available to prepare food influenced the types of food that they selected. Those that felt they did not have the time or inclination to prepare meals from scratch, perhaps because of long working hours or because of lack of interest in cooking, were more inclined to select convenience food in order to save time. Participants' might use convenience food to supplement a diet where the majority of meals were cooked from scratch and use these products as a way of *'bridging the gap'* during periods when they did not have fresh food at home and/or when they were especially short on time. Parents and others with responsibility for providing meals for others were particularly likely to view convenience food in this way; seeing convenience food as not being *'ideal'* but as a practical way of ensuring that meals were produced every day. A contrasting reason for selecting convenience food was because participants were not as interested in considering the quality of food when making their food choices and were more interested in the ease of cooking.
- The variety of food shopping facilities people had available to them locally also played a part in how people decided which food to buy. While the dominant factors in determining where people shopped were their personal circumstances and attitudes towards food, this was mediated by the availability of independent grocers, butchers, farmers' markets, and different supermarket

chains locally. For example a parent concerned with providing good quality food for their family, on a limited budget, might be inclined to do a big weekly shop at a large supermarket in order to get a large volume of food at a reasonable cost. In contrast, those for whom financial constraints were of a lesser concern were more likely to strive to buy their food from smaller specialist retailers such as butchers and farmers', rather than from the '*all under one roof*' supermarkets.

Overall it seems that participants' decisions of where to do their food shopping and the types of food they chose to buy was determined by their personal circumstances, their attitudes towards food, and pragmatic considerations such as the degree to which budget was a concern and what food outlets they had available to them.

Pragmatic, as opposed to ideological, concerns played a primary role for participants who took the middle ground or felt more positively towards GM food. For example, participants with budgetary constraints felt less negatively towards GM food, and mentioned cost as a potential factor in making a food selection were they faced with the choice of purchasing a non-GM or GM food product. This is not to say that people did simple calculations in which cost was considered more important than any other matter with regard to GM food, but rather that where cost was a key consideration in their food choices this could carry through to their attitudes towards GM food.

#### **Case study: Greg**

Greg is 39 and lives on his own on a housing estate in a big city. He was previously married and has a son and a daughter. His daughter, aged 11, comes to stay with him every weekend. Greg is unemployed at present having lost his job working as a machine operative in a food production factory 18 months ago when the factory closed down.

The food choices that Greg makes are heavily constrained by income. He does his food shopping when he gets paid his unemployment benefit (once a fortnight). After bills he is left with £49 for two weeks' worth of food and anything else he needs. He tends to buy mostly frozen food as he finds this more convenient, cheaper and he can get more meals out of it. He does not buy fresh food as it goes off quicker and would not 'keep' until the weekend when his daughter lives with him. With frozen food he can fill the freezer up and forget it's there.

Greg is unsure about what GM food is and describes himself as not really having any interest in the subject. When prompted, he does discuss the potential benefits and risks associated with GM food. He believes that there could be potential benefits to GM food such as increasing crop yields but that there may be possible long-term health risks associated with GM food. However Greg reported that his own decision about whether or not to eat GM food would be based on price alone.

## **Concerns about impact of food production on health**

The section above explained how participants' attitudes towards food and food production generally impacted on their food choices and attitudes towards GM food. In this section the link between concerns about the impact of food production methods on health and attitudes towards GM food will be examined.

As outlined in the preceding section participants notions of what constituted good quality food were based upon conceptions of the freshness and naturalness of food. These measures of quality were considered important as they were seen as acting as indicators for the healthiness of any given food. In addition to people's more general aspirations to eat healthily, participants had more deep-seated concerns about the relationship between food and health, and discussed having particular

concerns with commercial food production processes and the safety of food in terms of previous food scares.

Participants also discussed how they had concerns about the commercial food production process and the use of '*unnatural*' chemicals such as pesticides. These concerns were based upon the belief that the human digestive system was less able to cope with man-made chemicals. The inclusion of unnatural chemicals in food was seen as having potentially negative impact on health such as leading to allergies through to more serious impacts in terms of food causing serious diseases such as cancer. Participants with direct experiences of food production were more inclined to discuss such concerns around the food production process and the possible negative impacts on human health. These people had a negative view of GM food and associated GM food with unnatural, processed food.

The other main area that people discussed in relation to their attitude about food production and health was the impact of previous food scares on their attitudes towards food. For example, the impact of previous food scares had resulted in a lack of trust in food safety. Participants mentioned the BSE and salmonella food scares in particular, and how these had left them with concerns around the safety of animal products and a lack of confidence in how closely these industries were controlled. This anxiety regarding the safety of animal products resulted in these participants being inclined to be more negative towards GM food, particularly around the use of GM crops in animal food.

There was variation in how much emphasis different participants placed on these food safety concerns. A key factor in determining views on this issue was participants' personal circumstances. There were two main groups of people who were more likely to express food safety concerns:

- participants with responsibility for providing food for others, in particular parents; and,
- participants who were experiencing or had experienced health problems or were close to somebody with health problems.

These two groups of people had heightened awareness of health messages such as healthy eating and tended to be more inclined to engage with debates around food safety.

#### **Case study: Christine**

Christine is aged 41 and lives with her five-year old son. She works full time as an alternative healing therapist. Christine was brought up to '*live life in balance*' with nature. Her family had sensitive skin and she grew up believing that chemicals could have negative impacts on the human body.

Christine is very interested in food and believes there is a very strong link between food and health. She thinks that people can '*pollute*' their body with toxins found in unnatural, processed food. It is extremely important to her that her son is brought up eating fresh, healthy food. She enjoys cooking from scratch and uses fresh ingredients that '*put energy*' into the meals she prepares. She thinks it is important that people eat healthy food, containing '*energy*' as this promotes healing of the human body.

Christine does not agree with the development of food products which are unnatural. She is suspicious about science and technology and views activities such as genetic modification of food as '*tampering*' with nature. She questions whether Western countries have higher disease rates as a result of the food their populations eat and the use of pesticides in food production. When Christine decides what food to buy the factors she takes into account are the freshness and quality

of the food and the cost. Her preference is for organic, fresh food that has not been treated with pesticides; however she cannot always buy organic food due to budgetary constraints. She shops at her local supermarkets and farmers' market. She particularly enjoys the experience of shopping in the latter as she gets the opportunity to teach her son about the origins of food and she feels that the produce is fresher and of a better quality.

Christine thinks that GM food is '*not right*' because it is unnatural and '*against the laws of nature*'. She thinks that the human body is not suited to GM food and that eating it could have a direct negative impact on health.

While one perspective focused on concerns about the safety of food and the regulation of the food industry, another participant perspective was less preoccupied with the relationship between modern food production methods and health. These participants, whilst being aware of food scares, viewed them in a less alarmist way and in the context of all food as ultimately having some possible dangers. This view correlated with the view that '*life was too short*' to take notice of all the different food scares or pay attention to the '*constant stream*' of food health recommendations. They were less sceptical about food production methods and less interested in questioning what was actually involved in food processing. These participants trusted that the food production industry was regulated in such a way that the interests of the consumer were paramount, placed above business interests, and that therefore the products available to buy posed minimal or no safety threats to their health. Higher degrees of trust in food safety were associated with correspondingly less negative attitudes towards GM food and a belief that prior to any GM food product being sold it would be thoroughly tested to ensure consumer safety.

*I mean, like, if its produced in such a way... that you maybe don't even know how it actually comes to be on the store.... on the shelf. So you kind of put your trust in Tesco's or whoever to, to make those decisions for you.*

## 3.2 Attitudes to science and technology

This section will explore the role that people's attitudes to science and technology played in their attitudes to GM food. Two key perspectives, one being broadly positive and the other broadly negative, about the role of science and technology in food production, were held by participants.

### Positive view of science and technology

This perspective focused on the role of science and technology in striving to improve the quality of life. Scientists were viewed as being interested in examining the world and seeing what was scientifically possible with the end aim of making positive progressive advancement as part of the ongoing evolution of society. In addition to this scientists were not viewed as being driven by political motives.

A key component of the positive attitude towards science and technology was how participants thought about the levels of risk involved in scientific practice. Risk was viewed as being an unavoidable part of science. Technological developments were seen as involving risks, but these were seen as necessary if developments were to be made. People who had faith in science trusted in there being regulatory measures and systems to keep risks in check.

*At the end of the day, man, mankind has always sort of modified and improved things whether, whether it needed it or not, so just, just one of those things I accept...*

Certain socio-demographic characteristics were associated with a more positive attitude towards science. Perhaps unsurprisingly, those who had studied a science subject at degree level, and those who worked in science-based occupations, were more inclined to be positive. These participants seemed much more disposed to consider GM food in a positive light, from both a personal position and on a more abstract level i.e. thinking about the implications for wider society.

*My views are strongly persuaded by the fact that I've got an honours degree in chemistry, so I see modifications, you know how chemistry has improved our lives to begin with, so that's probably why I don't have maybe the same negative feelings as the next person where GM foods are concerned. I can see the benefits of doing things maybe rather than the negatives because of the positives that science has brought to life generally*

Overall participants who had a positive view towards science and technology were much more inclined to have positive views towards GM food. They viewed GM food in ordinary, everyday terms, rather than as something to be fearful of, and felt that as another scientific development in food technology it would be appropriately tested and regulated. These participants also argued against the claim that GM processes are unnatural, claiming that genetic modification is an extension of existing natural, scientific and farming practices which have been ongoing throughout history, such as selective breeding techniques. The argument was also made that human beings are part of nature, and therefore evolution includes the activities of humans.

These participants had reached the conclusion that GM food would involve risks, as with any other scientific development, but that ultimately the potential benefits would outweigh potential risks. Their trust in the value of scientific progress, and the regulation of scientific practice, meant that even if they had concerns about whether the potential benefits of GM food would be realised (for example, political concerns about whether food shortage problems would be addressed or whether the drive for profits would result in this not happening) or that GM food could represent a significant risk to the environment (for example, GM crops leading to 'original' varieties of crops dying out) their positive stance towards science and technology, and faith that scientists would find solutions to such problems, resulted in them holding more positive views towards GM food.

#### **Case study: Frank**

Frank is aged 25 and lives with his partner (they have no children). He works full time for a software organisation and his partner is a scientist. He has a degree in sports science.

He is very interested in cooking and does the majority of the cooking at home. He strives to eat fresh food rather than frozen processed food. He and his partner do their food shopping in the local supermarket on a weekly basis and then supplement this with visits to the local independent stores such as the butchers. They decide what to buy based on the healthiness and price of the food. Frank is very interested in where food has come from and how it has been produced and as a result always buys free range eggs and fair trade products.

Frank has a very positive attitude towards science and views its purpose as making new developments that improve the quality of life. He trusts the regulation of science and technology and has confidence that new products are tested thoroughly to ensure that they are safe for consumers. He thinks that scientific activity should only be limited on ethical grounds. Frank does not see himself as being a 'very' religious person, although states that he holds religious beliefs. He describes how humans were given the intelligence to create technology and use it in ways that are beneficial to them. Frank describes himself as cautious towards GM food and feels that he does not know enough about it to hold a stronger opinion. He believes that GM food could have far reaching impacts on the world food economy and have the potential to bring both benefits, such as

improving the nutritional content of food, and risks, such as impacting on farmers' livelihoods. He thinks that in terms of forming a stronger opinion on GM food in the future he would think about it from both a self interested point of view (for example, considering the price of GM food) along with taking into account the wider potential impacts on society.

## **Sceptical and cautious views of science and technology**

In contrast to the positive perspective outlined above, a second perspective was more sceptical towards science and technology. For participants with more cautious attitudes towards science and technology, the risks involved in scientific activity were viewed as less acceptable. Participants who had a more sceptical stance towards science were prone to articulate their views towards scientific development using emotive language and often referenced popular press slogans, such as '*Frankenstein food*' when discussing their attitudes to GM food. They also queried the motives and political neutrality of scientists and the extent to which their work was driven by, and regulated, by ethical considerations. For example, participants viewed the motives of scientists working on GM food as being corrupt in that they were only interested in making large profits, rather than being driven by more noble motives such as solving world food shortage problems. One perspective was that the world food shortage problem was greatly exaggerated, and that biotech companies employed the argument as a smokescreen for their scientific activity and profit making.

Other participants were of the opinion that scientific progress had developed at too fast a pace, that it was '*out of control*', and that the ethics of scientific activity received insufficient attention. These participants spontaneously mentioned scientific developments which had received extensive press attention when discussing their attitudes to GM food. In particular, animal cloning and the case of Dolly the sheep, and images of the 'earmouse'<sup>12</sup>, were given as examples of science being out of control and producing '*freakish*' phenomena. Those that were concerned about such issues saw GM food as similar in nature to these scientific developments and were fearful that they could have '*freakish*' impacts.

The final issue that participants who were more sceptical or cautious about science and technology discussed was the perceived lack of consistency of message in food recommendations. Participants reported feeling confused by the quantity and range of (often conflicting) health recommendations relating to food that they heard and were left feeling that they did not know '*who to believe*' when advice changed so rapidly. They felt that scientists were constantly changing their stances on what was and was not safe for people to eat. Those that expressed this opinion lacked confidence in GM food being found to be safe in the long term, and felt that it was much more likely that the safety of GM food would be subject to constant changes of scientific opinion.

The concerns outlined above were expressed by participants with more negative attitudes towards GM food, including participants who stated that they held religious beliefs. The central issue for participants holding religious beliefs was that nature and or the natural order of things was being tampered with and that this was fundamentally wrong.

*You're messing about with something...I don't see the benefits. It's like going against nature, isn't it? ...Because you can do it scientifically doesn't make it right somehow - unless there's a really, really good reason...you're altering things with this [GM food], but, but why? I don't see... I just don't, I can't think of any positive benefits for us in our society.*

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<sup>12</sup> This involved the transplantation of bovine cartilage cells under the skin of a mouse bred with a genetic mutation to prevent rejection, to demonstrate method of 'growing' cartilage cells to transplant to humans.

Participants' attitudes towards GM food were not however straightforward, or predictable, since their attitude formation involved a complicated interaction of factors. Where participants held religious beliefs, or had certain political opinions, this did not necessarily mean that this translated into them having positive or negative attitudes towards GM food, but rather that a complex interplay of factors occurred between their personal circumstances and wider worldviews. For example, having a pro-science attitude seemed more important than participants' political and or religious beliefs in determining how they felt about GM food. Indeed, participants discussed how their positive attitudes towards GM food were asynchronous with their wider political beliefs.

*I don't think it's [view on GM food] informed by a political position because my political position...is actually quite against GM food, like...the people who I voted for usually are against it... so if anything it goes against my usual political or whatever, if you see what I mean.*

## 4 How people respond to information about GM food

This chapter explores responses to different types of information about GM food in order to further develop the analysis of how attitudes are formed. The chapter explores how reactions to information further reveal pre-existing attitudes to GM foods, including how people weigh up the associated risks and benefits. It also examines the ways in which exposure to new and different types of information influences and impacts on attitudes towards GM foods. This chapter draws on data from the depth interviews, workshops and follow-up telephone interviews..The data was interrogated in order to identify cross-cutting themes between cases, and longitudinally (within cases) in order to explore how individual participants' attitudes developed during the course of the research.

### 4.1 Impact of participation in a deliberative workshop on attitude formation and development

#### Benchmarking of attitudes exercise

At the beginning of the deliberative workshop, participants were asked to take part in a benchmarking exercise in order to understand their current attitude towards GM food, participants were asked to position themselves in a line according to their attitude. There was very little movement in attitudes between the interviews and the beginning of the workshops. Those who expressed the strongest views about GM food were the most consistent in their views and none of those with positive attitudes towards GM food had changed their views. For example, among those who were only slightly negative about GM food in the interview, there was a change in attitudes towards the more positive end of the spectrum. Conversely, among those who were undecided, there was less change in attitudes because they still felt that they did not have enough information to make a decision.

These differences can partly be explained by people's different behaviours following the interview. It appeared that participants had either sought out further information about GM food, or had deliberately chosen *not* to find out more. One participant said that she had become more strongly negative towards GM food on the basis that she had read up on it after the interview, but had only read the negative arguments. This is an interesting example of the way in which people might seek out arguments which confirm their existing views. It may have also been the case that the group dynamic influenced the way that participants positioned themselves at the beginning of the workshop, with those who had less strong views converging so as to avoid conflict with other group members (the methodological implications of this are discussed in more detail in Chapter 5).

#### Presentation from representative of Novel Foods Division of FSA

The first substantive information source that participants received during the workshop took the form of a 20-minute PowerPoint presentation (the PowerPoint slides are included in Appendix C) and Q&A session led by a representative from the Novel Foods, Additives and Supplements Division of FSA. The presentation was entitled 'GM - an overview', and opened with an explanation of the role and standpoint of FSA, and an acknowledgement that while many FSA staff have a scientific background, they are not leading experts, and instead rely on the expertise of independent scientists to advise on risk assessment. The presentation went on to explain the

process of genetic modification and how it works, before going on to present what it can do, including the intended and unintended changes that genetic modification can bring about. Finally, the presentation considered how risk is assessed and how GM food is regulated (including labelling), before providing information on what GM foods are available on the market today.

The purpose of the presentation was to provide participants with a broad overview of the issues, in order to explore how this information impacted on their attitudes and to facilitate their engagement with the subsequent workshop exercises.

Responses to the presentation revealed what kinds of issues were of key concern to participants in formulating their viewpoints. In their response to the presentation, participants were particularly interested in issues about the extent to which GM is currently used in food production and the contrast between the level of regulation and restrictions on GM food in the UK as compared with the wider availability of GM food in the US. Questions were asked about these at the workshop and it was also highlighted as a key issue by participants in the follow-up telephone interviews. Participants were surprised that GM food is not more widely available on supermarket shelves in the UK and, in the follow-up interviews, people said that they would have liked more explanation of the reasons for this. There was also some surprise that GM food is not subject to tighter regulation in the US.

Questions to the FSA advisor following the presentation also focused on the potential impacts of GM food. Participants wanted to know how the price of GM food compares to the price of non-GM food, the potential risks in relation to the environment and health, and the potential impacts on other countries. There were limited questions about the scientific process of genetic modification itself.

The evidence suggests that the presentation from the FSA advisor had a particularly significant impact on participants' attitudes. Participants who had higher levels of trust in authority (see Chapter 3) accepted at face value the information they received from the FSA advisor and were reassured in their views by this information. In contrast, those who felt negatively toward GM food in the interviews, because they doubted profit-making motivations of organisations or governments involved in GM production, also had doubts about whether the balance of the information they were presented as part of the workshop was biased.

When asked for their views on the FSA advisor who led the presentation and Q&A session, follow-up telephone interview participants adopted one of two contrasting positions. One position was that the advisor presented the information in a balanced and unbiased way, without revealing their own view on GM food. These participants also said that they would not have wanted further information on the advisor's personal position on GM food. However, another point of view was that the FSA advisor was pro-GM food and that they presented the information and answered questions in a skewed way, which focused more on the advantages of GM food as compared with the risks.

Another perspective was that the FSA advisor's input made participants feel more positively towards GM food. One reason given was that the presentation made them more aware of the potential benefits of GM food. A second reason was that because the presentation was not perceived to have raised any intrinsic health issues in relation to GM food, this suggested that the health risks are not that significant. Participants who felt positively towards GM food said that the presentation helped them clarify their existing views, by explaining the science and correcting some of their misconceptions. As a result they felt more confident holding their existing attitudes.

## Current uses of GM in food production

The next stage of the workshop aimed to understand what factors participants took into account when assessing the acceptability of GM food. This provided important insights into how people weighed up the risks and benefits associated with specific applications of GM technology in food production. Participants were provided with information cards explaining five current uses of GM in food production. Each card included a brief description of the usage, the extent of its current use, where it is produced/ sold, who produces and uses it, how it is labelled and whether GM material is present in the final product (see Appendix D). Participants were then asked to discuss the acceptability of these different uses in small groups.

In response to this information, participants focused again on the extent to which GM food is currently available. There was surprise about how few GM food products were on the market in the UK and discussions also focused in more detail on the wider availability of GM food in the US, as compared with the UK. Two different possible reasons were given for this. One perception was that availability was linked to the position of big business within society and participants suggested that the UK is rightly more suspicious of big business than the US. Another reason given for the limited availability of GM food in the UK was the perception that the UK government insists on greater levels of regulation compared to the US. Those participants who adopted a more trusting attitude towards authority said that finding out about the wider availability of GM food in the US reinforced their existing positive views, because they thought that if GM food was harmful, it would not be available in the US.

Confusion about the physical process underpinning the different uses of GM food was expressed by participants who felt that this made it more difficult to judge the acceptability of different uses. For example, participants said that they did not understand how it could be possible for GM to be used as part of the food manufacturing process but not present in the final product. There was also concern that some food might contain GM material, but because this was impossible to identify, it was not a requirement for it to be labelled.

This exercise further revealed how the risks and benefits associated with GM food were perceived and weighed up. When participants were asked to make judgements about the acceptability of different uses of GM in food production, they drew on similar key considerations to those which had arisen at the interview stage (see Chapter 2). In rating the acceptability of different uses of GM in food production, participants holding a range of attitudes focused particularly on issues of transparency and choice. For example they emphasised the importance of being able to identify whether or not a product was GM, or GM had been involved at some stage of the production process.

Participants also discussed which potential benefits were most significant in assessing the acceptability of different uses of GM food. Those uses which had the potential to benefit developing countries experiencing food shortage were favoured. GM Rennet was also considered to have important benefits in terms of animal welfare because it meant that calves' stomachs would not have to be used in the production of cheese. In discussing the example of Golden Rice, there were different perceptions about the risks and benefits of improving the nutritional qualities of food. One perception was that this was a positive thing, while another perception was more cautious and suggested that this product might also carry health risks. Finally, participants also said that the information had made them reflect on potential environmental benefits that they had not considered before; for example if products could be created with a greater shelf life, this could reduce food wastage.

A number of risks were also identified as key factors in assessing different uses of GM in food production. Overall the problem of the unknown long-term risks was raised with participants questioning whether it is possible to weigh up pros and cons of different uses without knowing what these long-term risks are. More specifically the potential health risks of the different uses of GM in food production were a key criterion on which participants made judgements. A distinction was made between health risks associated with consuming GM food as opposed to the use of GM as a processing aid, with the latter viewed as posing less risk. However, there was also concern that where GM was used as part of the production process, there would still be a risk of contamination with the final product. For example, participants drew comparisons with the risk of allergies from products made in factories that use nuts. In general participants did not express what the specific health risks might be although there were frequent references to allergies and the possibility that eating GM foods could cause disease. At a more societal level, participants also questioned the profit-making motivations of those producing GM food and suggested that this might limit the potential benefits to developing countries.

As described in Chapter 3, participants' attitudes towards GM food can be understood in the context of their broadly positive or sceptical attitudes towards science and technology. Participants who were positive about science and technology said that their existing views towards GM food were confirmed by the research process. For example, those who argued that GM food is an extension of existing agricultural practices were unfazed by information about the current extent and types of usage of GM technology in food production, and said that this did not change their views.

There were three broad perspectives about the impact of information on attitudes. One perspective was that information about current uses of GM technology had raised participants' awareness of potential social benefits that they had not considered before. However, a second perspective was adopted by participants with a more cynical approach, who suggested that while they could see potential benefits the information had not addressed their concerns about the profit-making motivations of those involved. Finally, a third perspective highlighted the limitations of the information received and suggested that it failed to address the lack of evidence about future health risks.

This study found that the potential health implications of GM food are a critical personal concern for people. For example, where people were given information about types of GM food that carry health benefits, they raised questions about whether these types of food also carried health risks. Those who were very focused on the relationship between food and health at the outset approached the research process from a personal health perspective. However, as participants were introduced to information about wider uses of GM food, they started to consider the issue in terms of the wider societal impacts. The potential social benefit of GM food which carried most weight was its potential to address global food shortages, although participants wanted to know why there are still food shortages if GM food is currently available and how this linked to the politics and economics of food production and distribution.

For other participants, the process of moving between a more personal and a more societal perspective appeared to leave them feeling ambivalent, in the sense that they were left with mixed feelings towards the issue. As described in Chapter 3, this can be understood in terms of participants' personal circumstances. Where people have responsibility for feeding family members such as children and grandchildren, the potential personal impacts of GM food, for example in relation to allergies, remain of critical importance.

The discovery that GM food is not widely available in the UK also impacted on participants' attitudes towards the issue. For example, people reasoned that this may mean that there is a lack of evidence available about the potential risks/ benefits of GM food, which would make it more difficult to adopt a clear position on the issue.

Information about different uses of GM food appeared to strongly impact on participants' views about regulation and labelling. There was consistent agreement that any foods which could potentially have GM substances in them should be labelled, including in cases where it is impossible to identify whether or not a food contains GM material. In particular, there was concern that animal products from animals which are fed GM products are not required to be labelled. Two arguments were prevalent. The first was that there is no harm in labelling these foods and allow people to choose whether or not to purchase them. The second argument related to cases where GM was used as a processing aid and was not present in the final product. Participants argued that even if GM material is not present in the final product, some people might disagree with the process of GM and want to avoid food where it was used altogether.

As discussed in Chapter 2, a range of participants said that they felt differently towards GM use in relation to animals, as compared with its use in crops or plants. Participants, including those who felt more positively about GM food following the workshop, felt that this issue was not fully addressed in the workshop, and questions about animal welfare remained a caveat to their views which they felt need to be addressed.

## **Arguments for and against GM food**

A second small-group exercise during the workshop aimed to explore how participants assessed different arguments for and against GM food and to understand how participants viewed the different stakeholders involved in public debate on the subject. Participants were given information cards which presented extracts from eight different sources, arguing for or against GM food (see Appendix E). The extracts have all appeared in the public domain. Information about the source of each argument was also provided.

A range of information sources were selected as follows:

- a campaigning organisation for the agricultural biotechnology industry;
- an environmental campaigning organisation;
- an academic based at a university;
- an academic working for a biotechnology company;
- a campaigning organisation promoting science;
- an agricultural research centre;
- a campaigning organisation monitoring work on genetics;
- a charity focusing on organic food production;
- a politician.

Participants were asked to work in small groups to select those arguments that they found most persuasive. Participants were very engaged with the complexities of the different arguments for and against GM food and they did express opposing views. Overall the arguments that were prioritised by participants as being the most significant related to health issues; either the health risks associated with GM food or the potential health benefits. There were two reasons why health appeared to be such a significant issue for participants. One reason was that participants felt that the information provided failed to clarify for them what the actual potential health benefits and risks were. Another reason expressed by participants was that health risks were the main way GM food would impact on their own lives.

A second key area of discussion was the balance between the potential benefits of GM food for developing countries and concern about the profit-making motivations of companies producing GM food. These two arguments were linked and perceived as two sides of the same coin because it was felt that while the technology could potentially benefit people in developing countries, these benefits might not be felt in reality if the producers of GM food were too focused on making a profit from GM products.

Overall participants distinguished between arguments that they felt were based on evidence and those that they considered to be expressions of opinion. Those arguments which were perceived to use factual evidence were considered to be more convincing.

The ways in which participants responded to these arguments was clearly shaped by their pre-existing attitudes towards GM food. For example, there was a commonly held view that the more negative arguments towards GM food presented in this exercise were weak. Those who were more positive towards GM food took this as evidence to support their more positive position. However, those who were negative towards GM food suggested the weakness of these arguments was a reflection of a bias in the workshop materials, rather than a reflection of the wider debate.

Participants said that they were less convinced by arguments from those sources that were perceived to have a vested political or economic interest in GM food. Two types of organisations were judged to have strong interests in the subject; third sector organisations with political interests and businesses with economic interests. There was a perception that statements made by such organisations were more likely to be based on rhetoric as opposed to science or research. They also felt that organisations might use extreme tactics in order to get the issue on the agenda. More generally, questions were raised about who funds research conducted by third sector organisations. Industry and business sources, such as the biotechnology company cited were also perceived to have clear economic interests in the issue. Participants suggested that their arguments would focus on the benefits of GM food because they were motivated by making profits from the development of GM food.

In comparing the different information sources, participants felt that particular sources were more trustworthy. One perspective was that charities were less biased than business, while another viewpoint expressed was greater trust in academics as opposed to campaigning organisations. Participants said that they would disregard any argument made by a politician, not because politicians were perceived to hold a particular position on GM food but because they were generally untrustworthy. However, it was also suggested that the government should be a key source of independent information on the subject. Finally, there was a view that *all* the arguments provided in the exercise reflected vested interests. Participants holding this view emphasised that they would like information from an independent source, which they could take at face value although there was no consensus on what type of source could play this role.

The way that people participated in and responded to this exercise suggests that the source of the information is as critical as the information itself. This was highlighted by those participants who said that they would disregard any argument made by a politician or campaigning organisation. For example, one participant who found an argument by the environmental campaigning organisation quite convincing, stated that their usual assumption would be that they would *not* agree with any argument put forward by that source. However, where participants were unfamiliar with the source of an argument, they adopted a more trusting approach. For example one participant assumed that because an organisation was described as 'third sector' it was independent.

The process of reflecting on the interaction between arguments and information sources impacted on participants' attitudes in different ways. For example, participants said that this exercise had made them adopt a more sceptical and reflective approach to the subject. People described how they would re-consider their views in light of new information but would then accept or disregard this information when they found out the source. It was suggested that this highlights the ways that people's views can be manipulated. However, another reported impact of this exercise was that participants felt clearer about their own position on GM food. These people said that the exercise enabled them to become familiar with arguments which provided further support for their views.

Participants who were broadly positive towards scientific and technological developments (see Chapter 3) focused on the sources that they considered more trustworthy and the arguments that they already agreed with. For example, while participants said that they would remain slightly cautious until they had further information, they felt more optimistic that there could be trustworthy, independent sources of information about GM food.

Finally, participants reflected on what they would want from future information sources and discussed how they would now be keen to know the source of any future information they were given about GM food. Another preference expressed by participants was that they would like an independent and trustworthy source of information, independent of vested interests.

## **4.2 Overall impact on attitudes of taking part in the research**

This section explores the overall impact of the research on those participants who took part in both an interview and a deliberative workshop. It draws on the attitudes towards GM food expressed in the interviews as the baseline for participants' attitudes prior to receiving any information (see Chapter 2 for a description of the range of attitudes). This is compared with participants' expressed attitudes at the end of the deliberative workshop. Evidence from the follow-up interviews is also included.

In general, all the participants gave more qualified answers when they were asked to describe their attitude to GM food at the end of the research. Whatever their views, participants' explanations of their views were more nuanced in that they included consideration of both the advantages and disadvantages associated with GM food. There were, however, two ways in which views and attitudes evolved as a result of participation in the workshops. The first way in which views developed involved transition or movement from a negative, neutral, or positive view to a more strongly positive attitude towards GM food. However, a second way in which attitudes developed involved no overall switch in attitudes but a variety of more subtle changes in perspectives on GM food.

### **Transition towards more positive attitudes**

A transition towards more positive attitudes following the workshop was reported by participants from across the range of attitudes held at the start of the research (see Chapter 2). For participants who started the research with a positive attitude and finished the workshop feeling more strongly positive, reasons given for their change in attitude included that the information provided had reassured them of their existing position in various ways and resulted in them feeling more confident in their existing positive attitude because they felt that the information they had received provided further support for their views.

For participants who started the research with negative or undecided attitudes, reasons for the transition towards more positive attitudes focused on the way in which the information provided had made them more aware of the potential benefits of GM food and the various uses of the

technology. This information had helped dispel their sense of GM as a dangerous and unknown technology. One participant said that they had moved from considering the *personal* risks of GM food to thinking about the wider *social* benefits:

*“I was completely indifferent at the start. I really didn’t have anything either way, and now I’m leaning more towards agreeing with it a lot more ’cause it’s far less scary than I thought it was. I think there are quite a lot of benefits, more benefits than I originally thought there might be so I feel more positive towards it than I did when I first came in.”*

### **No switch in attitudes**

This unchanged overall position following the workshop was again adopted by participants from across the range of attitudes towards GM food identified at the start of the research. Where people felt negatively about or undecided towards GM food, the common reason provided for their unchanged position was that they still did not have enough information to make a judgment. One perception was that this was a reflection of participants’ own personal levels of knowledge while another perception was that there was still a lack of research evidence available which would allow participants to reconsider their position. Participants who felt more negatively towards GM food at the outset particularly focused on the need for further information about the potential long-term health risks associated with GM food. Participants whose attitudes remained negative or undecided reported that the research had stimulated their interest in the subject. In contrast, where participants remained indifferent, they stated that their lack of a clear opinion at the end of the workshop was a reflection of a continued lack of interest in the subject.

For participants who had started the research with positive attitudes towards GM food, and reported no change in attitude following the workshop, various reasons for this lack of change were given. For example, people felt that they had not heard anything to make them change their positive attitude. Furthermore, while participants explained that the additional information had made them more aware of the potential risks and dangers of GM food but they still felt positively towards GM food. In this sense, while overall attitudes remained unchanged, their position had become more nuanced as a result of thinking through the potential benefits and risks of GM food in a structured way.

## 5 Methodological implications

This research project adopted an innovative three-stage design, which included in-depth interviews, deliberative workshops and methodologically-focused telephone interviews. This chapter draws on evidence from across the study in order to highlight the implications for the design of future research on GM food or similar topics. In particular, it focuses on the methodological implications in relation to engaging people in research and areas for future research.

### 5.1 Engaging people in research

#### Engaging people with low levels of knowledge or interest in research

These findings have implications for future research which aims to engage people who have low levels of knowledge and interest in the particular subject. This research found that people's decisions to participate in research on a particular subject are likely to be influenced by their underlying interest in and knowledge of the subject matter. However, findings from this study suggest that there are a number of practical steps which can be taken to encourage participation among people who have lower levels of interest or knowledge in a subject. In follow-up interviews participants said that it is important that people are reassured that their views are of value during the recruitment process. Where possible, the recruitment process should communicate that the research is aimed at understanding the views of people with varying levels of knowledge, interest in the subject and different attitudes. Alongside this, participants said that a key factor is the offer of a financial incentive, combined with steps to ensure that engagement in the research is practically convenient.

The study also found that people with low levels of knowledge could get frustrated when the questions raised by the research were not answered. For example, where people felt they need more information about GM food in order to formulate an opinion, they expected research interviewers to be able to provide this. In this study, this dynamic was addressed by explaining to interview participants that they would receive further information at the deliberative workshop. The implication is that there is a need to avoid a situation where people who have low levels of knowledge and confidence in a subject are probed on their responses without receiving any information from the researchers.

#### Engaging people who feel more sceptical about the issue being discussed

Findings from this research also suggest that people who perceive that they hold a position which is against the 'received' view may be more difficult to engage in deliberative research. The follow up interviews provided some evidence to support this hypothesis as it appeared that participants who expressed negative attitudes towards GM food were more likely to question the neutrality of the FSA.

It is therefore important to ensure future research includes strategies to encourage participation among people with more sceptical views. There are a number of possible ways this could be achieved. First, detailed information can be provided upfront about the organisation(s) funding and undertaking the research and about the research purpose, as transparency is important to instil confidence in the research process. Second, recruitment literature and communications about the research should emphasise that the views of participants with a broad range of viewpoints, including sceptical perspectives, are actively sought and that participants will have the opportunity

to express those views. In this study the decision was taken to provide participants with detailed information about the FSA as the funder and initiator of the research and this was repeated at the workshops (see Chapter 4 and Appendix B for details). There were two perspectives on the neutrality of the FSA advisor. One point of view considered the FSA advisor to be a neutral expert, while a contrasting point of view was that the FSA advisor was unavoidably likely to give a particular, pro-scientific perspective, despite their promise to raise uncertainties and disputes when providing answers to specific questions. However, participants holding this second view reported that the fact that they were able to express their sceptical attitudes throughout the workshop made them feel more positive and engaged with the research process. Nevertheless, careful consideration should be given in future research to the attachment of 'expert' presenters to various bodies.

A third suggestion is that evidence of the independence and robustness of the research process should be provided to participants as part of the recruitment process, including background information about the objectives of the organisation delivering the research and, where this is the case, their independent position in relation to the issue under discussion.

## **Engaging people from different backgrounds in deliberative workshops**

The research highlighted that the large and small group composition for deliberative workshops on complex issues require careful consideration, in order to ensure sufficient homogeneity among participants. For example, in deliberative research on subjects which require people to engage with complex scientific processes, it is particularly important to consider differences in education levels among participants.

Overall evidence from this study showed that conducting research in small as opposed to large groups can enable people to feel more confident about engaging with complex issues. This was particularly the case for people who felt that they had low levels of knowledge about the subject. However, there was a perception that differences in educational levels and in age within the small groups impacted on people's confidence in talking about this topic. Participants supported diversity in the make-up of the group, but said that this became problematic when one person felt in a minority.

A complicating factor when thinking about the composition of groups is that homogeneity in background needs to be balanced with sufficient diversity in attitudes. In follow-up interviews people expressed preferences for groups which include people with a range of viewpoints as this would expose them to different arguments and perspectives.

Another key implication for future deliberative research is that a reflective approach needs to be taken in understanding the impact of group dynamics on individual attitudes. This means that the research process needs to gather evidence of the group dynamic and this should be examined as part of the analysis stage, along with participants' explicit accounts. This study found that participants themselves did not attribute changes in their own attitudes to group dynamics although people did say that they felt they had influenced the views of others. However, analysis of transcripts revealed that participants did appear to be influenced by the way that others in the group expressed their views.

## **Providing information on complex issues**

Future deliberative research on complex issues such as GM food will need to engage with the tension between provision of balanced, stimulating information and practical time constraints.

Participants spoke positively about the information provided as a means for stimulating discussion and for alerting them to arguments and viewpoints they would not have otherwise considered. However, participants did report feeling overwhelmed by the volume of data provided during the exercises and felt that if they had been given more time, they could have better engaged with the ensuing discussions.

Participants themselves expressed differing views on whether they would like information presented from a single source or whether they should be engaged with multiple types of information. One preference was for a single source of information that participants could focus their attention on. This preference was expressed by people who were more trusting of the research process. Another preference was that if there had been more time, participants would have liked additional sources or levels of 'expert' input. Suggestions included:

- Two presentations; one from a scientist who viewed GM food favourably and another from a scientist who viewed it negatively.
- The inclusion of a scientist directly working in the field of GM food could have been included in order to inform participants of latest developments and future research.
- More time allocated for the expert to address the issues of concern to participants.

Involving more than one 'expert' in the workshops in order to present differing arguments about GM food to participants was considered. However, the disadvantage of this approach is that the particular presentational style and personality of individual experts could result in them being more persuasive.

The examples of arguments for and against GM food provided to participants were necessarily simplified. Given more time, it would have been useful to explore participants' responses to sources of information which presented *both* sides (i.e. risks *and* benefits) of an argument about GM food. This may be more relevant to future communication initiatives in this area. Additional sources of information to include in future research might be related to the role of the media. While participants discussed perceptions of the media in depth interviews, future deliberative work could explore the role of the media in translating and interpreting arguments from different sources. A third area of complexity relates to potential future applications of GM technology. Within the practical constraints of this research, it was necessary to focus solely on existing uses of GM technology in food but speculation about future applications would be an interesting and illuminating topic for future consideration.

Ultimately, it is important for future research design to be aware that, if the intention would be to provide a full range of perspectives on GM food, the research would need to be run over much longer timescales. This would require a much greater investment of time and commitment from research participants and the research design would need to be carefully structured according to the specific background of the participants in order to facilitate this.

## **5.2 Areas for future research**

### **The value of longitudinal research in understanding attitudes to complex issue**

Findings from this study highlighted the potential value of research which tracks attitudes longitudinally. The evidence suggests that people's views can change over time, particularly in relation to such a complex subject as GM food.

The follow-up interviews conducted as part of this research provided some evidence about the longer term impact of participating in deliberative research, both on participants' attitudes and behaviours. It highlighted the gaps between people's projections about the impact of research on themselves and the longer-term reality. For example, participants said that while they had intended to find out more about the subject following the workshop, they had not done so at the time of the follow-up. Participants also suggested that the impact of the research on them would become more apparent in the longer-term, if the issue of GM food rises up the public agenda. They suggested that, at that point, they would have the knowledge and interest to engage with the debates.

Findings from this research highlight that research designs which ask people about previously held views need to be reflective, and acknowledge that the process of remembering past viewpoints is complex. While the longitudinal design of this research enabled the exploration of the relationship between people's perceptions of their past views and the way those views were expressed at the time, participants' recollections of their views did not always correspond to the views that they had expressed. Where this was the case, participants described previous views as consistent with current views, thereby not recognising that their attitudes had changed. One explanation of this is that people are resistant to inconsistencies or contradictions in their own viewpoints or are resistant to acknowledging where other people have influenced their views.

Finally, any research design also needs to consider what counts as a 'benchmark' of initial attitudes. This study found that the very act of participating in the research may have impacted on participants' awareness and attitudes for a number of reasons. First, all the participants had already answered questions on GM food as part of the BSA survey. Second, participants sometimes reporting actively seeking more information about the subject after being invited to participate in an interview. Third, the very process of reflecting on the subject and asking participants to articulate their opinions impacted on participants' views.

## **The value of research which explores the relationship between attitudes and cultural background**

These findings also suggest that further exploration of how attitudes differ among people from different cultural backgrounds would be an interesting area for future research. One gap in this research was that the final sample did not include people who defined themselves as BME as the sampling necessarily prioritised ensuring a diversity of BSA respondent attitudes and including people who were clustered in two geographical areas. However, this research did find that people's cultural attitudes and family experiences in relation to food are strongly associated with their attitudes to GM food.

## 6 Conclusions and implications

In the following sections, the evidence from this study is summarised in relation to the previous research on attitudes to GM food, which was described in Chapter 1. The chapter also draws out some implications for future policy relating to communications, regulation and labelling of GM food.

### 6.1 Overall contribution of the research to understanding attitudes towards GM food

This qualitative study has identified four broad sets of attitudes towards GM food; negative, positive, undecided and those who hold no view on the subject. The study found that within these four broad attitude sets there are a diverse range of opinions that describe each and that, while the issue of GM food has now been on the public agenda for a number of years, many people's opinions are not well established and are subject to change over time.

A key focus of this research was to understand why some people are neither negative nor positive towards GM food. While previous research has tended to equate this middle position with a lack of interest (Brook Lyndhurst 2009), the study has identified four reasons why people might hold this middle ground. One viewpoint was that this issue is simply a low priority in people's lives. Another perception was that GM food is a matter of individual consumer choice rather than a social issue, and therefore people consider themselves to be '*neutral*' on the issue. A third reason was that people felt they could not make a judgment on the issue *in the abstract*; rather they would need to consider the practical context of each application of GM in food production. Finally, indifference was also associated with feeling that a lack of knowledge or evidence meant it was difficult to make a decision about attitudes towards GM food. This view was expressed at both the in-depth interview stage and *after* participants had been presented with information at the workshop.

The study also found that there were different levels of understanding of the process of GM among participants, and this was associated with negative, undecided and positive attitudes towards GM food. A positive attitude towards GM food was associated with a clearer understanding of the processes involved and potential applications, a focus on key social benefits of the technology such as tackling food shortages for developing countries and an awareness of risks to health and the environment combined with a view that these are outweighed by potential advantages. Conversely, those who were negative or undecided on the issue had a more emotional response towards the technology, which was sometimes based on confusion about the processes involved. As had been found with previous research, these participants often focused more on potential health risks associated with ingesting GM food, and saw this as the main way that the issue would impact on their own lives (Brook Lyndhurst 2009).

### 6.2 Understanding attitude formation in relation to GM food

This study has found that there is variation in the way that people with different attitudes towards GM food engage with new information on the subject. These differences can be understood by examining the underlying worldviews and circumstances which help to shape people's attitudes. Findings from this study build on previous research (Grunet et al 2004 cited in Brook Lyndhurst 2009) which has highlighted the complex relationship between 'bottom-up' and 'top-down' processes in attitude formation (see Chapter 1 for an explanation of this). This study has revealed that the interplay between 'top down' and 'bottom up' factors appear to play an important role in the development of people's attitudes towards GM food. For example, where people hold positive attitudes towards sciences and technology generally, and accept risk as an inevitable part of

scientific development, they are also likely to focus on the potential benefits of developing GM food, while accepting that there are also unknown risks associated with the technology. In contrast, negative or cautious views in relation to science and technology can mean that the existence of unknown risks is a decisive factor in the formulation of people's opposition to GM food and this appears difficult to shift with new information, unless it is able to demonstrate that there are *no* risks from GM food. Previous research has also found that attitudes towards science and technology are a key driver of attitudes towards new food technologies (Grunet et al 2004, Traill et al 2004, Cormick 2007, Cehen and Li 2007, Gaskell et al 2006; all cited in Brook Lyndhurst 2009).

This study also found that a key driver of attitudes was people's notions of '*good quality food*', which in turn is rooted in the context of individual circumstance and personal histories. This finding supports previous research outlined in Chapter 1 (Brook Lyndhurst 2009) which found that where people's attitudes to GM food are shaped by broader ideological concerns, they are more likely to say that information they received confirmed their existing view and to disregard information that contradicted this.

### 6.3 Implications for FSA policy relating to GM food

Findings from this study would suggest that there are implications for FSA policy relating to GM food in the areas of information and communication, regulation and labelling.

#### Information and communication

It is important to acknowledge that there were participants who said that they did not want more information about GM food; the main reasons given were they felt that greater awareness of the nuanced arguments about GM food would prohibit them from making practical everyday decisions about the food that they eat or that it simply was not a priority issue in their life. However, there were also people who considered that more information was important, particularly in relation to consumer choice.

A key finding of this study is that when people are weighing up information on GM food, perceptions of the **sources** of information are as significant as the content. A clear message was that information about GM food needs to be provided by credible and trustworthy sources. However there was disagreement over which types of organisations or individuals best match these criteria. Different levels of trust in the abilities of companies producing GM food and regulatory authorities to be credible and trustworthy were expressed. Where there was stronger opposition to GM food, people questioned the motives of regulators and politicians. In addition, campaigning third sector organisations were considered to have vested political interests in the issue while business was considered to have economic interests. In contrast, those holding positive or neutral views toward GM food adopted a more trusting attitude towards such companies and regulators, and this supports previous research (Chen and Li 2007; Costa-Font 2008, Traill et al 2004 cited in Brook Lyndhurst 2009).

It appears that there are mixed views toward the government, in relation to this issue with people expressing varying levels of trust towards politicians and government bodies. Reasons cited for trusting government included a belief that government would act in the interests of general public and also that government-sponsored publications would be grounded in sound scientific research. A contrasting position was more cautious about government publications due to lack of confidence in the credibility of government sources. In addition, the impartiality of government was questioned because of concerns that the government may have vested interests in the development of the technology which may colour its presentation of the 'facts'.

The FSA were considered to be separate from government, to be politically impartial, to not stand to gain from the technology and to be a more credible source of information. However, while steps were taken to encourage participants to express their honest views about the organisation (see Chapters 1 and 5 for more details) there is a possibility that these views reflected people's awareness that the FSA were funding the research and involved in the workshops. It is also the case that these views appeared to be based on the information provided at the workshop rather than pre-existing knowledge of the FSA. Other professional bodies were also regarded as impartial and trustworthy including health professionals and academics. People had mixed views about the trustworthiness of scientists, which reflected their broader attitudes towards science and technology.

More broadly, there were different perspectives about whether information should come from one credible source, or from multiple sources. People who were more positive towards scientific and technological developments felt more optimistic that there could be a single, independent source of information about GM food that they could trust. Those with a more sceptical viewpoint expressed preferences for multiple sources of information, along with clear background about *who* the sources were and what their interests in the subject might be.

Overall these findings suggest that the FSA is well positioned to provide the public with information on GM food, so long as it can provide evidence to the public of its independence from government, from business and from campaigning organisations. Communications about GM food should be complemented with clear contextual information about the source of that information and their position in relation to the issue.

In terms of the **content** of communication about GM food, this study has shown that people would like more information about the process of GM, and the extent of its use, both in terms of the variety of applications and prevalence. Data from the interviews demonstrates that people have different levels of knowledge and understanding about the process of genetic modification, and there are many misconceptions. This may relate to the educational background of people, specifically whether they have studied science or technology subjects. Interestingly, there was very limited knowledge about the extent to which GM food is currently available, both in the UK and internationally. Workshop participants found information about the process of GM, applications and prevalence to be useful in formulating their opinions.

This study has highlighted a need for better information in relation to three aspects of GM food. There was a particular wish for further information about the potential long-term impacts of GM food. This information would need to address people's interest and concern in two key areas; in relation to the implications of GM food for wider society and the potential impacts at a personal level. For example more information about the role of GM food in relation to food shortages and the potential long-term impacts on health was commonly mentioned. The research also highlighted a third key area where people wanted further information. This was information on how GM food relates to animal welfare issues, and the potential impact of this technology on animals.

Overall, there is a need for communication about GM food to openly acknowledge uncertainties. While this study found that there is demand for definitive information about the long-term risks of GM food among those who hold more negative views, it is important that regulators and scientists acknowledge when they are unable to provide this level of certainty, as this was considered to be an important factor in terms of the credibility and trustworthiness of information.

This study has found that information about GM food can be effectively communicated through a number of different routes. People's preferences included print and broadcast media, public

services such as libraries, schools and doctor's surgeries, and national mail outs. The most consistently mentioned avenue was through labelling and information in supermarkets.

The research found that although people expressed a preference for information to be provided through the broadcast and print media, this was also acknowledged to be problematic. For example, there was common belief that the media has over-hyped food scares in the past and that it has focused on extreme examples and images of new food technologies. The power of these methods of communication in embedding striking images and language in relation to GM food was also acknowledged.

The implication is that attempts to communicate with the public about GM food require a multi-pronged approach. Information should be communicated in a clear, accessible and concise format to avoid the risk of the public becoming overburdened or disregarding the information.

## **Regulation and labelling**

Findings from this research have implications for regulation and labelling of GM food. This study found that existing labelling of food is considered inconsistent and confusing. For example, people reported that the labelling of some foods as 'non-GM' or 'GM-free' had led them to believe that GM ingredients were widely used in other products. As with previous research, this study found that understanding about how regulation and labelling of GM food currently works was limited (Mellman Group 2006, FSA 2003 cited in Brook Lyndhurst 2009).

It was suggested that this information should be provided on the product but that more detailed information should also be available from other sources, such as in leaflet format within the supermarket and on manufacturers' websites. Suggestions for labelling products included developing a GM food range within shops similar to the marketing of organic ranges. Another suggestion was a traffic light system in which products are accorded a colour according to whether they contain no GM material, GM derived ingredients or GM ingredients.

People in this study felt strongly that *all* products which involve GM processes should be labelled. This included products produced with GM technology and products from animals fed on GM animal feed, which do not currently have to be labelled (see Chapter 1). It is important to note that these labelling preferences for GM food were shared by people with a broad range of attitudes toward GM food. This reflected a key theme cutting across this research, and also reflected in previous research (Costa-Font 2008, Saba and Vassalla 2002; cited in Brook Lyndhurst 2009), that the values of transparency and individual consumer choice are of shared concern to people across the GM food attitudinal spectrum.

# Appendix A Interview topic guide

## EXPLORING ATTITUDES TO GENETICALLY MODIFIED (GM) FOODS INTERVIEW TOPIC GUIDE

### Research Objectives

The interviews have three key objectives:

1. To explore participants' views about and attitudes towards GM food
2. To explore why participants have those views and attitudes
3. To understand what participants consider to be the risks and benefits of GM foods

*As this is an exploratory study, we wish to encourage participants to discuss their views and experiences in an open way without excluding issues which may be of importance to individual participants and the study as a whole. Therefore, unlike a survey questionnaire or semi-structured interview, the questioning (and the language and terminology used) will be responsive to participants' own experiences, attitudes and circumstances.*

*The following guide does not contain pre-set questions but rather lists the key themes and sub-themes to be explored with each participant. It does not include follow-up questions like 'why', 'when', 'how', etc. as participants' contributions will be fully explored throughout using prompts and probes in order to understand how and why views, behaviours and experiences have arisen. The order in which issues are addressed, and the amount of time spent exploring different themes, will vary between participants according to individual demographics and circumstances.*

*Interview materials (sheets A, B and C) are to be used in conjunction with this discussion guide. The purpose of these materials is to facilitate participants' reflection on the subject, and they will be used flexibly to achieve this.*

### **Introduction**

*Aim: to introduce NatCen, explain the purpose of the interview and the research, confidentiality, interview practicalities, and help the participant adjust to the interview situation*

- Introduce self, NatCen (as independent research contractor)
- Explain FSA has commissioned research to understand people's attitudes towards GM foods
- Discuss purpose of research: briefly outline objectives above
- Emphasise that not an expert in the subject and not expecting participant to be.
- Emphasise neutrality of the research
- Explain: confidentiality, digital recording, length (about an hour) and nature of discussion (specific topics to address, but conversational in style), reporting and data storage issues, including consent for anonymised transcript to be archived at Qualidata
- Any questions

## 1. Background and personal circumstances

*Aim: to provide important contextual information to be followed up later in the interview*

- Ages of household members and relationships within household
- Main daytime activities within household
- Description of local area
- Hobbies and interests
- General interest in food/ cooking
- Responsibility for food shopping and cooking in household
- Food shopping available locally (e.g. local convenience stores, supermarkets, markets)
  - What shops / market(s) do they use and frequency

## 2. Attitudes and behaviour in relation to food in general

*Aim: to provide context about broader values, attitudes and behaviours in relation to food to be followed up later in the interview*

- How much importance do they attach to the food they eat
  - Reasons for their views
  - How does this affect what they buy
- When shopping for food, how do they decide what to get
  - Whether decide in advance or see what is available
  - What makes them decide to buy particular items
  - What makes them decide not to buy particular items
- What would they ideally like to eat if there were no constraints (e.g. budgetary)
  - Reasons for their views

### Awareness of and views about food production

- Awareness of the way food is grown and produced
- Views about the way that food is grown and produced
  - Use of pesticides/ organic foods*
  - Use of technology in agriculture, eg. to create new improved crop varieties, new products to combat pests and diseases*
  - Intensive rearing of animals*
  - Processed foods (levels of salt & sugar, fat levels, preservatives, different types of processing)*
  - Local sourcing*
- Whether they have any particular concerns about any of these methods of food production, e.g.
  - Effects on the environment
  - Effects on human health (e.g. obesity, heart health, cancers etc)
  - Food Safety (eg. BSE, Salmonella)
  - Animal welfare
  - Food security and future food supply
- Whether any of these concerns affect they way they shop/eat
  - How & why
- What food related issues have they heard about in the media
  - Why they think the media has picked up on the issue
  - How important is it to them
  - What their personal view is of this/ these issues and why

### **3. Knowledge of GM**

*Aim: to understand the extent of participants' knowledge and awareness of GM foods*

#### Understanding of what GM is

- How familiar they are with the term 'Genetically Modified [GM] Foods'
  - What they understand it to mean
  
- How clear they are about what happens when food is genetically modified
  - What they imagine is actually done to food; what process is involved
  - What has influenced their views

#### Awareness of issues around GM

- What comes to mind when they hear the phrase 'genetically modified foods'
  - What image/ phrases they associate with it
  
- What sort of stories have they heard about GM foods
  - Where did they hear about them
  - How long ago
  
- What sort of image was given of GM foods
  - How were GM foods described or portrayed [e.g. any specific terms used]
  - What were their own reactions to what they saw/heard
  
- What are their own sources of information about GM foods
  - Media
  - Friends/family
  - Politicians/government
  - Scientists
  - Campaigning organisations
  - Food producers/shops/labels
  
- Whether they hear more or less about GM now than in the past
  - Why they think this is
  
- How well informed they feel they are about GM foods: reasons for their views
  - Whether or not they would like more information about GM
  - What difference might this make

#### Uses of GM

- What they think GM is used for
  - Why they think GM foods have been developed
  
- Extent to which they think Genetic Modification is being used in food production
  - Extent to which GM food crops being grown in UK & Europe
  - Extent to which they are being grown globally
  - Whether they think they eat GM foods

#### 4. **Attitudes towards GM**

*Aim: to understand how participants weigh up the risks and benefits of GM Foods and what underpins participants' attitudes*

##### Interest in GM

Their overall level of interest in the subject of GM foods

- Why/why not

##### Views about GM and factors influencing

- How would they describe their overall attitude to GM foods (e.g. positive, negative, indifferent, unsure)
  - Reasons for their views PROBE ALL
- Whether or not they think GM foods should be available to buy
  - Where: in the UK or internationally
  - Under what conditions
- Whether or not their views about GM are linked to any specific beliefs they hold
  - Religious
  - Political
  - Environmental, conservation, animal welfare
  - Health, lifestyle
  - Views on science
- Extent to which their views about GM foods have changed over time
  - How & why
- How they think other people generally feel about GM foods
  - Why they think other people are pro, anti, indifferent etc.
  - What are likely to be the main influences on their views

*[Read out **Sheet C** before proceeding to the next section]*

##### Perceived risks and benefits of GM foods

*Explain that t we would like them to think about what could be the potential benefits and risks of GM foods according to the definition just provided. Record on **Chart A**.*

- What they think could be the potential benefits of GM foods (and to whom)
  - Potential timeframe where applicable
- What they think could be the potential risks of GM foods (and to whom)
  - Potential timeframe where applicable

*(If needed use the following prompts (mark entries in response to prompts with P/ on the sheet)*

- Food safety
- Health and nutrition
- Environment
- Food prices (explore also in relation to animal feed)
- Food production (e.g. increased yields, resistance to disease, ability to grow crops in range of climactic / soil conditions)
- Developed and developing countries
- Current and future generations
- Which of the risks and benefits they have mentioned are the most important ones that influence their own views about GM foods
  - Whether the issues are important to them personally or to the wider society

## Views about different uses of GM [genetic modification]

*Interviewer to read out in turn each explanation of different uses of GM food and technology  
(Interview Material Sheet B)*

- Reactions to each of the explanations
  - Whether positive or negative (or mixed)
  - Reasons for their views

*Then discuss the explanations more generally:*

- Whether they feel that some uses were more acceptable than others: if so, which
  - Reasons for their views
  - How they feel about the use of GM for medicines or other consumer products compared to its use in foods
- How they feel about the use of science & technology in food production (ready meals/tinned and frozen foods/additives for taste and colour etc.)
  - Reasons for their views
  - How their views about the use of GM compare with these

## **5. Further information about GM foods**

*Aim: To explore what forms of information would engage participants with the subject (in order to inform the workshops). To also understand participants views towards information provision about GM foods and towards the different organisations playing a role in providing information.*

- What further information about GM foods would be most useful to them, e.g.
  - Processes involved
  - Research undertaken
  - Potential benefits/risks
  - Likely long term effects
- Who they think should provide information about GM foods
  - What would help to raise the credibility of the information provided
- How could the information be most effectively provided
  - Sources (including food labelling)
  - Formats

## **6. General / closing issues**

*Aim: To explore how participants have found the opportunity to reflect on the issue, to explain the next steps for the research and ask for participants input*

- **Experience of taking part in the interview – has experience affected their view**
- Discuss date for deliberative workshop and describe likely structure of event (please check if they would prefer a Saturday or a weekday evening for a three hour event)
- Views on types of information that would be helpful in the workshop
- Anything that the participant would like to add
- Obtain written consent (and leave participant a copy) for archiving of transcript at Qualidata and answer any concerns participant may have

GIVE INCENTIVE TO PARTICIPANT

**Material A: Risks and benefits of GM food**

	<b>To whom</b>	<b>Timeframe</b>
<b><u>Risks</u></b>		
<b><u>Benefits</u></b>		

## Material B: The different uses of GM food and technology

The below shows the main food uses taken from FSA's consumer website eatwell.gov.uk (<http://www.eatwell.gov.uk/healthissues/factsbehindissues/gmfood/?lang=en>)

1. GM food is food from a crop such as wheat, or a fruit or vegetable, or an animal that has been genetically modified.

2. 'GM-derived' ingredients: **With GM-derived ingredients it is not possible to tell whether GM material is present or not.**

Explanation: *Food can come from a GM crop but can be processed so that it is not possible to tell whether the final product has GM DNA in it or conventional DNA. An example of this is soy oil, which is made from GM soya beans.*

3. GM processing aid: **This means that the final product does not have GM material in it but that genetically modified products have been used as part of the production process.**

5. GM ingredients in animal feed: GM crops, such as maize, are used to feed animals that are later eaten, such as chickens. There are also animal products, such as eggs and milk, which come from animals fed on GM crops..**It is not possible to tell from the final product whether GM material is present (it is possible to tell from the feed but not once it is digested by the animal).**

### Examples other uses of GM (non-food related)

**Cotton:** It is estimated that 46% of the global cotton crop in 2008 was genetically modified. GM insect-resistant cotton is grown in a range of countries including Australia, India, South Africa, China and the USA.

**Medical uses:** Genetic modification is used in the prevention, diagnosis and treatment of disease. For example, GM mice are used in research into the causes and cures for human diseases, and some medicines are manufactured using GM bacteria.

## Material C: Definition of Genetic Modification

GM, which stands for 'genetic modification' or 'genetically modified', is the process of altering the genes of a plant, animal or micro-organism, or inserting a gene from another organism (living thing). Genes carry the instructions for all the characteristics that an organism inherits. They are made up of DNA.

# Appendix B Deliberative workshop topic guide

**Workshop length: 3 hours**

## **Workshop objectives**

- To better understand the factors that shape people's attitudes to GM food, including why people are indifferent to GM food
- To see how attitudes develop when presented with a range of information and a group dynamic
- To explore what engages people with the subject of GM food
- To explore the circumstances in which people changes their views

*As this is an exploratory study, we wish to encourage participants to discuss their views and experiences in an open way without excluding issues which may be of importance to individual participants and the study as a whole. Therefore, unlike a survey questionnaire or semi-structured interview, the questioning will be responsive to participants' own experiences, attitudes and circumstances.*

*The following guide does not contain pre-set questions but rather lists the exercises/activities to be undertaken, the information/stimulus materials that will be presented to participants, and the themes and sub-themes to be explored during the workshop. It does not include follow-up questions like 'why', 'when', 'how', etc. as it is assumed that participants' contributions will be fully explored throughout in order to understand how and why views, behaviours and experiences have arisen.*

*For some sections, participants will be put into two small groups with 6 or 7 participants in each group. The composition of the groups will be decided beforehand, with the aim to include people with a range of views / attitudes towards GM in each. Each small group will have a facilitator whose role will be to introduce the exercises, guide the discussion, refer to the expert where relevant, record questions for the question board and ensure that all participants have the opportunity and encouragement to contribute.*

*Large group and small group sessions will be digitally recorded and transcribed, and all other outputs (e.g. flip chart question board, facilitator notes) will be retained for analysis.*

## 1. Introduction (whole group, 30 mins, led by NatCen facilitators)

### Introduction to the workshop

- Who we (NatCen) are and the research study, our role in facilitating the workshop
- Workshop participants – that everyone here has already taken part in an interview
- Aims and purpose of workshop – emphasise that people should feel free to express their views throughout the workshop (including that it's fine to say if they don't feel strongly and if their views do or don't change)
- How this research fits in with the FSA's work on GM food – current and future: *the workshops on exploring consumer attitudes to genetically modified food are part of on-going work in this area by the Food Standards Agency. The subject of genetic modification is a contentious area and people hold very diverse views on the issue. The FSA previously carried out a number of activities on attitudes to GM food in 2003 as part of a Government debate on this subject, and continually monitors consumer views on a quarterly basis. These workshops build on the British Social Attitudes Survey which explored people's attitudes towards food technologies including GM. With increasing global food demand, food shortages and increasing food prices, the issue of GM may rise up the public agenda This work will allow the FSA to understand more about consumer attitudes to GM food, the perceived risks and benefits, and how these can be addressed in terms of future policy, regulation, information and communication.*
- Introduce GM 'expert' and the FSA (FSA is an independent UK government department set up to protect the public's health and consumer interests in relation to food) and explain expert's role - purpose to provide factual information and answer participants' questions relating to the process of GM, existing and potential applications of GM, and evidence from research into GM. Explain that the expert will provide information about themselves and their position on GM, but is also committed to raise areas of uncertainty and disputes when providing answers to participants' questions.
- If applicable, introduce FSA observer and explain their involvement in workshop
- How plan to work together: explain purpose of small group and large group sessions
- Recording, confidentiality and anonymity: including how recordings/ personal information will be stored according to data protection regulations. Reassure anonymity of participants in the final report.
- Ground rules for the workshop (acknowledge issue can be contentious, that people will have a range of views, including feeling and remaining indifferent on this issue, there are no right or wrong answers, safe space where everyone should feel comfortable saying what they think, also rules for not interrupting people or speaking at the same time.
- Housekeeping – fire exit, nearest toilets & that people should take comfort break as and when they need to, timing of break,

### Group introductions

- Participants to go round the circle and say their first name and the area where they live

### Icebreaker: Spectrum of Opinion Exercise

*Aim: to warm participants up, do participant introductions and provide initial insights among the group into each others' views on GM*

*Note for facilitator - emphasise at the beginning of this exercise that there will be opportunities for people to change their minds throughout the workshop – this is just an opportunity for people to start discussing the issues*

- Participants to take up positions in the room across a spectrum or continuum according to the extent to which they agree or disagree with the BSA question 'On balance, the advantages of genetically modified (GM) foods outweigh any dangers?' *Note for facilitator - Lead facilitator to explain to group the imaginary continuum (e.g. where it starts and ends, and also that there is space in the middle of it for those who are neither agree nor disagree, or who are unsure or don't know,, or who don't feel like they have enough information to decide), facilitator should also explain that it is ok if people don't interpret the spectrum in the same way as everyone will have the opportunity to explain why they have stood where they have. Also this is just to get a general sense of people's views and we expect that this might change during the course of the workshop.*
- They are then asked to speak to the people closest to them for five minutes to find out why they have stood in that position.
- During this time participants can shift position relative to each other
- Each person feeds back to the whole group to explain why they have stood in that position – if they have moved then they can also explain why

### Introduce the question board

Materials: Flip chart stand

*The purpose of this is to:*

- *Introduce this tool for recording the questions that participants have about GM as they arise throughout the workshop Explain how this will work in practice*

*The overall purpose of the question board is:*

- *To understand which of these questions the workshop has answered, and how this impacts on participants views*
- *To have a record of any questions that the workshops don't answer, and why these questions are important to participants*

*Facilitator to explain that:*

- *Throughout the workshop, participants will be encouraged to think of questions regarding GM that they would like answered.*
- *When they are in small groups, their facilitator will be responsible for putting any questions they would like addressed on to the question board.*
- *When we are having large group discussions, there will be one facilitator who will put questions up on the board as they arise.*

- *Participants are also welcome to write questions on the board themselves at any time.*
- *We will return to these questions over the course of the workshop and at the end we will have a discussion about any questions that they have raised which haven't been answered.*

## **2. What is genetic modification? (whole group, 25 mins, led by FSA 'expert')**

*Aim: To provide participants with a simple and clear explanation of the science of genetic modification and explore how this impacts on their attitudes*

**Materials:** Participants will be provided with handouts of the slides (see Appendix C)

- PowerPoint presentation by FSA 'expert' about the process of genetic modification
- Large group discussion chaired by a Natcen facilitator
  - Ways in which information is new and different to what they expected (any misconceptions?)
  - Details of what is new learning; reasons they think they were unfamiliar with it
  - How information provision affects their perception of GM: positive and negative, and why
  - What questions it raises and why – *Natcen facilitator to add to the question board*
- Q&A session - expert to answer scientific questions on the process of GM modification

## **3. Uses of genetic modification (small groups, 30 mins followed by 10 mins feedback to whole group, led by NatCen facilitators with 'expert' also on hand to answer questions/queries and lead Q&A at end of session)**

**Materials:** list of names in each group and x2 packs of the uses cards (see Appendix D)

*Participants to divide into two small groups (each with a facilitator, groups to be planned prior to the workshop in order to include people with a range of views/attitudes towards GM) – groups to be given set of five cards, each explaining a different **current application** (related to the food chain) of GM. Each card to include:*

*Brief description of the application*

*Extent of its current use*

*Where it is produced/used/sold (as applicable)*

*Who produces and uses it (type of organisation/ company)*

*How it is labelled, whether GM is present in final product*

- Participants to read through the different cards (5 minutes)
- Small group discussion (each small group facilitator to refer questions to expert where an immediate answer would help small groups in their discussions)
  - Discuss:
    - Reactions to this information ALL CURRENT USES OF GM – extent to which it is a surprise, if so what is surprising, if not where they had heard this before

- Views about use of GM for various types of food production: vegetables, livestock feed, meat etc.
- Views on the labelling of these applications – how should they be labelled
- Views on regulation of these applications – how should they be regulated
- Views on communication / information about these applications – should there be communication / information beyond labelling, why, how (in what formats)
- As a small group sort uses according to those that are more or less acceptable
  - What would make applications more / less acceptable
  - How does it affect their view of GM, factors that influence attitudes
  - Any questions raised
- Large group Q&A (*participants to turn around to face the front of room*)
  - *Small group facilitators to add any questions raised to the question board*
  - Q&A with 'expert'
  - Explore impact of expert answers on participants views

#### **15 MINUTE BREAK with refreshments**

#### **4. Potential benefits and risks (small groups 30 mins, followed by 10 mins feedback to whole group, led by NatCen facilitators, 'expert' to observe only)**

**Materials: x2 sets of arguments cards (8 cards) (see Appendix E)**

*Aim: to explore how people respond to different arguments for the benefits and risks of GM. To explore how people understand the motivations of different stakeholders involved in the GM debate.*

- *Participants to stay in the same small groups (each with a facilitator – groups to be given set of 8 coloured cards, each of which has an argument about the benefits or risks of GM. These are all arguments that have been used in the public domain. There are an equal number of arguments for the benefits and arguments for the risks. The source of the argument is included on the back of each card.*

#### Small group discussion

- *Returning to their groups, the small group should choose the three arguments that they find most persuasive (emphasise that it is ok if the group does not reach final agreement on these e.g. could include arguments that some find most persuasive but others do not – differences in opinion will be recorded and they will also have the opportunity to feed back differences in opinion to the large group)*

As part of this process, facilitators should probe:

- Why certain arguments are more/ less persuasive
- How did knowing the source of their argument influence their assessment of it
- Which sources they trust / don't trust
- What they think the motivations are of different organisations concerned with GM

- Large group feedback session:
  - Any major areas of disagreement
  - Ways in which this activity has impacted on views about GM
  - Impact on their views about communication and information
  - Questions arising after information provided – *Natcen facilitator to add to the question board*

**5. Concluding section: changes arising from information provision and deliberation (30 mins, led by NatCen facilitators, 'expert' to observe only)**

**Materials: 'Changed opinion' and 'same opinion' cards**

*Aim: To ask participants to reflect on whether, how and why their views have changed, to highlight any outstanding concerns / questions that people have not answered in the workshop and find out what information and action people would like in the future in relation to regulation, communication, public debate and labelling and the production of GM, to summarise key messages, to inform participants about the next steps for the research*

- Ask people to split in to two halves – people whose views haven't changed at all and people whose views have changed.
  - Probe – thinking back to the spectrum of opinion exercise has their position changed?
- Each participant to explain in what way and why
- Go through the questions that are listed on the question board and discuss
  - Which haven't been answered
  - Why are these questions important
  - Who would they trust to provide the answers to these questions
  - Preferred communication channels – who should provide the information
  - Likely impact of more information
- What action would people like to see in the future
- General discussion around issues arising from workshop
- Key messages they think have come out of the deliberation
- Any other issues

Summing up

**Materials: Sources of information leaflet – which will be in each participant pack**

- Thank participants for their involvement
- Information about next steps for the study – including that the report will be available on the internet. Any participants who would like a hard copy of the report should leave their contact details with NatCen facilitator
- Provide sources of information leaflet to all participants which provides useful telephone nos. / website addresses they can use to access further information. This leaflet will also provide

contact details for NatCen for people wishing to get information about outputs from the research.

- Give out participant payments
- Consent to be contacted for following interviews

# Appendix C Workshop presentation slides

Slide 1

GM – an overview

SANDY LAWRIE  
NOVEL FOODS DIVISION  
FOOD STANDARDS AGENCY

Slide 2

Food Standards Agency - FSA

Non-Ministerial government department, with offices in London, Aberdeen, Belfast and Cardiff

Our purpose: to protect consumers by improving the safety of food and giving honest, clear information.  
We will make it easier for everyone to choose a healthy diet

Our policies are based on science and evidence

Scientific advice is provided by panels of independent experts at national or European level

We are neither for nor against GM food

Slide 3

GM = genetic modification  
or genetically modified

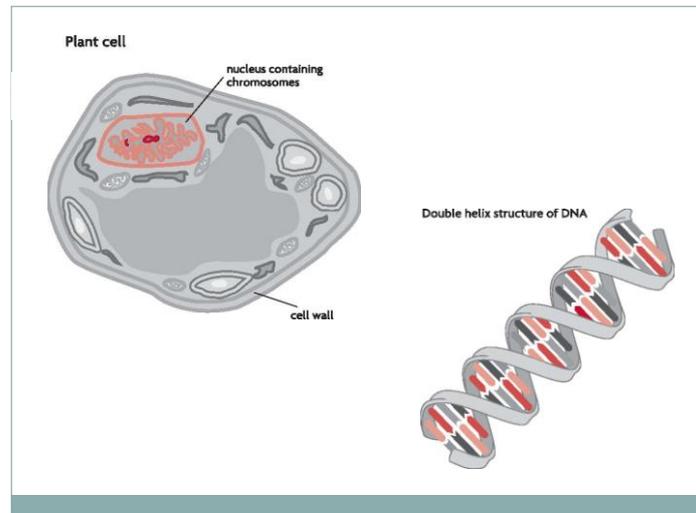
- What it is
- How it works
- What it can do
- GM foods on the market

Slide 4

genetic modification  
= modifying genes

- a **gene** is a set of instructions used by living cells as a blueprint for making proteins
- genes are made of **DNA** and are arranged in **chromosomes**
- genes are **inherited** from parents
- genes define what a plant -- or animal, or micro-organism -- is and what it can do

Slide 5



Slide 6

my genes are different from yours

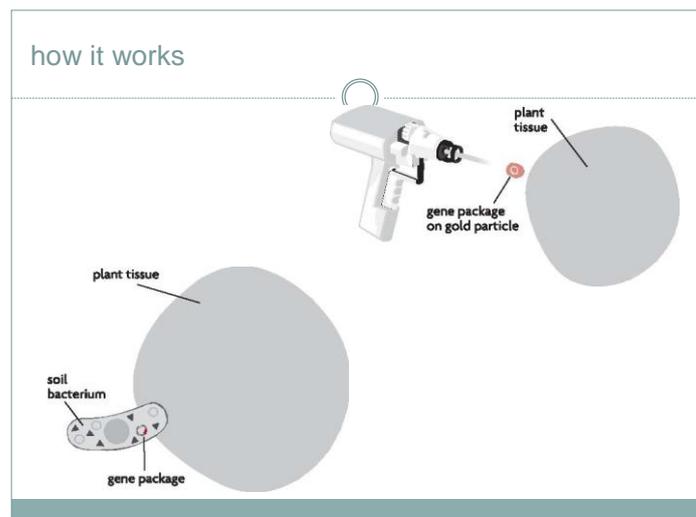
- individuals are not identical
- observed variations are due to subtle differences in genes
- differences in genes do not always cause visible differences in structure or function

Slide 7

genetic modification

- in the 1980s biologists understood more about DNA (“molecular biology”)
- it became possible to isolate an individual gene from DNA and make copies
- using these specific DNA sequences it was possible to:
  - add a gene to a cell, or
  - switch off an existing gene

Slide 8



Slide 9

what can GM do

changes can be intended or unintended

intentional changes:

- pest resistance (insecticide)
- ability to break down toxic substances (herbicide)
- delayed ripening

Slide 10

unintentional changes

- are existing genes affected?
  - where was the new gene inserted
  - how many copies
- does the new ability interfere with the normal functioning of the plant?

Slide 11

food from GM plants

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- what happens when we eat GM food?
  - possible effects on health
  - possible effects on nutritioncould result from intended changes or unintended changes in the plants
  
- what happens when GM crops are grown?
  - what if the new plant “escapes”
  - what about effects on wildlife

Slide 12

assessing risk

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- there is a regulatory process that GM plants must undergo before they can be grown or used for food
  
- scrutiny is at EU level by the European Food Safety Authority
  
- the EFSA panel is made up of scientific experts from the UK and other countries
  
- EFSA scrutinises each new type of GM plant before advising whether it is OK

Slide 13

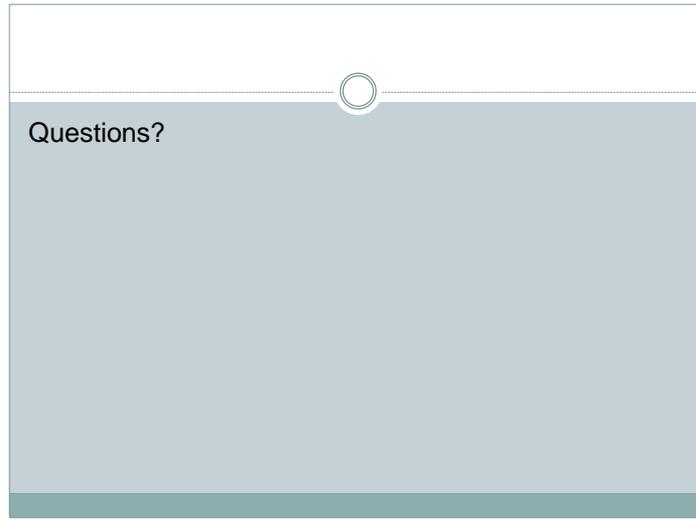
how GM food is regulated

- only authorised GM crops can be grown in the UK and in other EU countries
- only authorised GM foods can be sold in the UK and in other EU countries
  - this applies equally to imported food
- all GM foods must be labelled
  - except for very low level, unintentional presence of authorised GM material

Slide 14

what GM foods are on the market?

- the main approved GM crops are
  - soya, maize, oilseed rape
- beans and grains are processed into ingredients
  - vegetable oil, cornstarch, flour etc
- no GM crops are currently grown in the EU for food use
- GM commodities are imported for use in animal feed and GM maize is grown in some EU countries for use in animal feed
- very few products in UK shops are made with GM ingredients



## Appendix D Case study examples of current uses of GM in food production

- Each case study will be presented on a separate A5 card

### GM soya

#### **What is it?**

GM soya plants are resistant to a herbicide – a chemical that kills plants. As a result, farmers can more easily control weeds in the fields where GM soya is being grown.

#### **Who developed it and where is it grown?**

GM soya was developed by large seed companies (Monsanto and Pioneer). It was first introduced in 1995 and is used extensively by farmers in the countries where soya is a major crop, including the USA and South America. Because of the climate, soya cannot be grown in the UK.

#### **How is it used in the UK?**

Very little of the soya crop is used as soya beans. The majority is processed into food ingredients including vegetable oil and soya flour. These ingredients are used in a wide range of foods.

The UK and other European countries import soya products for use in food and in animal feed. Foods containing GM soya products are not widespread on UK shelves. Soya meal – the residue after the oil has been extracted from soya beans – is widely used as a source of protein in animal feed.

#### **What about regulation and labelling?**

GM soyabeans, and the products made from them, have been approved for use in the UK since 1996. Soya flour and soya meal can be tested to find whether they came from GM soyabeans. It is not possible to test soya oil to whether it originates from GM or non-GM as all traces of the genetic modification are lost during the manufacturing processes. By law, all food ingredients made from GM soya must be labelled.

## **GM maize**

### **What is it?**

GM maize plants make a type of protein that is toxic to certain insects. This protein is normally found in bacteria in the soil. GM maize is resistant to attack by certain insect pests such as the corn borer, which weakens the stems of the maize plants so that they fall over and are worthless.

Growing GM varieties of maize means that farmers can reduce the amount of insect damage and minimise the use of insecticide sprays.

### **Who developed it and where is it grown?**

GM maize has been developed by a number of major seed companies, including Bayer, Monsanto, Pioneer and Syngenta. GM maize is widely grown in many areas of the world, including North and South America, Europe and Australia. GM maize has not been grown in the UK but it has been grown in a number of European countries, including Spain, France and Germany, for use as animal feed.

### **How is it used in the UK?**

Maize (corn) is the source of a wide range of materials that are used as food ingredients, including cornstarch, cornflour, glucose syrup and corn oil.

UK and other European countries import significant amounts of maize products for use in food. Maize products are also imported for use in animal feed.

### **What about regulation and labelling?**

Foods from GM maize have been approved in the UK since 1996.

Some maize products, such as cornflour, can be tested to find out whether they came from GM maize. More highly refined products, such as corn oil and glucose syrup, cannot be tested as all traces of the genetic modification are lost during the manufacturing processes.

By law, all food ingredients made from GM maize must be labelled.

## **GM papaya**

### **What is it?**

GM papaya is resistant to the ringworm virus that had wiped out a large proportion of the crop in Hawaii.

### **Who developed it and where is it grown?**

GM papaya was developed in two US universities during the 1980s and 1990s. The GM papaya fruit is grown by farmers in Hawaii. The first GM papaya was introduced there in 1998 and production returned to the levels before the virus became established.

It is approved in the USA and in Canada but it has not been considered for use in the UK.

### **How is it used in the UK?**

Without a European authorisation GM papaya cannot be sold in the UK or in other European countries.

### **What about regulation and labelling?**

The papaya fruit can be tested to show whether or not it is a GM variety. GM papaya is not labelled where it is sold in the USA.

Since it is illegal to sell GM papaya in the EU, labelling is not an issue in the UK.

## **GM rennet**

### **What is it?**

Rennet is the name for the substance responsible for clotting the milk in the first stages of cheese production. Rennet is traditionally prepared from calf stomachs.

GM rennet is made using yeast or bacteria that have been genetically modified to make the same active substance that is found in calf stomachs.

### **Who developed it and where is it used?**

GM rennet was developed in the early 1990s by European food ingredient companies as an alternative to the traditional calf rennet, since there was an increasing shortage of calves being slaughtered each year.

GM rennet is widely used.

### **What about regulation and labelling?**

GM rennet has been evaluated by independent experts who advise the UK government and was cleared for use in the 1990s.

The GM micro-organisms (yeast or bacteria) are not present in the rennet products and the use of GM rennet cannot be detected in the cheese.

There is no legal requirement for its use to be declared on food labels.

## **GM rice (“Golden rice”)**

### **What is it?**

Golden rice has been modified to have a high level of vitamin A, which is not normally found in rice grains. A person consuming one portion of rice would receive the daily requirement for vitamin A.

### **Who developed it and where is it grown?**

Golden rice has been developed by a University and a research institute in Switzerland. It may soon be available to be grown in countries where large numbers of the population are deficient in vitamin A, such as India.

### **How is it used in the UK?**

Golden rice has not been considered for use in the UK. Without a European authorisation Golden rice cannot be sold in the UK or in other European countries.

### **What about regulation and labelling?**

The rice can be tested to show whether it is the GM variety. The rice has a deep yellow colour due to its vitamin A content, and this also differentiates the rice from other varieties.

# Appendix E Arguments for and against GM food

## Argument 1

“GM crops have the potential to provide unique solutions to the serious health problems faced both by consumers in the UK as well as in developing countries. [For] example[ ]...

*Golden Rice*: this is a form of rice containing high levels of provitamin A. Vitamin A deficiency is a common cause of blindness in children in developing countries; Golden Rice has the potential to contain over 20 times more Vitamin A than standard varieties.”

*SOURCE: Agricultural Biotechnology Council: “the umbrella group for the agricultural biotechnology industry in the UK”*

## Argument 2

“The global demand for food is expected to increase by 50 per cent by 2030. This [meeting the global demand] will be achieved through the development of both biotic crops, resistant to disease, and abiotic crops, resistant to drought, salinity or flooding, using modern biotechnology techniques, including GM. The question is whether or not Europe will be contributing to this process, or hindering it, as it is at present.”

*SOURCE: Professor Sir David King, Director of the Smith School of Enterprise and the Environment at the University of Oxford quoted by Sense About Science “A charitable trust to promote good science and evidence for the public”*

## Argument 3

“Those in the green movement may have their hearts in the right place, but there is very little knowledge. The debate is low-grade and alarmist. Our aim is to get more production on less land, which means that less land is used for agriculture. Any ecologist will tell you that conventional agriculture has a larger negative impact on the world than anything else.”

*SOURCE: Dr Ray Bressan, a professor at Purdue University in the United States and academic with biotech company FuturaGene quoted on the Citizenship Foundation website (“an independent education and participation charity”)*

## Argument 4

“In the last decade, momentum towards publicly-funded improvement of UK crops based on GM technology has sadly been lost. And unless we make changes, the costly framework for regulatory approval that now exists in the EU means that a valuable technology is likely to become the exclusive province of wealthy multinational corporations”.

*SOURCE: Professor Ian Crute, Rothamsted Research (a British agricultural research centre), quoted by Sense About Science “A charitable trust to promote good science and evidence for the public”*

### **Argument 5**

The new compounds produced in the GM food may cause an allergic reaction. Food allergies are on the increase as we eat more varied diets with new ingredients. It will be possible to test if the GM genes come from peanuts, for example, which are known to cause allergies in some people, but with new sources it will be much harder. When a new food is introduced, it takes 5-6 years before allergies are recognised

*SOURCE: GeneWatch UK (a not-for-profit group that monitors developments in genetic technologies from a public interest, human rights, environmental protection and animal welfare perspective)*

### **Argument 6**

The GM industry's professed concern for the world's poor and hungry has been criticised as a cynical marketing ploy to win over public opinion...although the GM industry has been saying for 25 years that GM crops are needed to feed the world, no drought-resistance or saline-tolerant GM crops are available commercially or near to being available.

*SOURCE: The Soil Association ("a membership charity campaigning for planet-friendly organic food and farming")*

### **Argument 7**

Once GM crops are planted, cross-pollination means other crops often become contaminated and GM material ends up in the food chain. Contamination scandals are now commonplace, often originating from farm trials in which the GM crops are unapproved for human consumption.

GM organisms are also serious threat to biodiversity. Designed to grow faster and stronger, they out-compete native varieties and, again, cross-pollination (which its supporters insisted was impossible) could result in their genetic material spreading far and wide, potentially altering entire species. Once they make it out into the wild, there is no way to recall them and we will have to live with the consequences.

*SOURCE: Greenpeace (an international environmental activist network)*

### **Argument 8**

We have been feeding ourselves perfectly adequately since overcoming problems of hunger in our early existence. GM is not necessary.

*SOURCE: Michael Meacher, former Environment Minister quoted on the Citizenship Foundation website ("an independent education and participation charity")*

# Appendix F Telephone interview topic guide

## P6240 EXPLORING ATTITUDES TO GENETICALLY MODIFIED (GM) FOODS TELEPHONE INTERVIEW TOPIC GUIDE

### Research Objectives

The telephone interviews have two key objectives:

- To explore further how respondents' attitudes were affected by the deliberative workshops
- To gather data on the respondents' experiences of taking part in the workshops in order to inform possible future FSA research

*As this is an exploratory study, we wish to encourage participants to discuss their views and experiences in an open way without excluding issues which may be of importance to individual participants and the study as a whole. Therefore, unlike a survey questionnaire or semi-structured interview, the questioning (and the language and terminology used) will be responsive to respondents' own experiences, attitudes and circumstances.*

*The following guide does not contain pre-set questions but rather lists the key themes and sub-themes to be explored with each participant. It does not include follow-up questions like 'why', 'when', 'how', etc. as participants' contributions will be fully explored throughout using prompts and probes in order to understand how and why views, behaviours and experiences have arisen. The order in which issues are addressed, and the amount of time spent exploring different themes, will vary between participants according to individual demographics and circumstances.*

### Introduction

*Aim: to introduce the interviewee's role in the research, explain the purpose of the interview, reiterate confidentiality, interview practicalities, and help the participant adjust to the interview situation*

- Introduce self – explain that work in the qualitative research unit but have not been part of the project team who has been running the project on attitudes to GM Foods.
- Explain that this interview is in follow up to the interview and workshop that they have taken part in.
- Ask participant if they would like a reminder about who Natcen and the FSA are (they will have already received this information twice so may not want reminding), If they do explain that Natcen are an independent social research organisation who have been commissioned by the FSA to conduct this project (*The accompanying sheet provides more information about the FSA and background to the project which can be cited*)
- Discuss purpose of the follow up interview: briefly outline objectives above
- Emphasise that we are keen to get feedback on their experience of participating in the project in order to help the design of future research.
- Emphasise your independence from the research process.

- Explain that while the research team **will** know who said what, we hope that participants feel free to express their honest views – there are no right or wrong answers as far as we're concerned.
- Let participants know that you are aware it is some time since they participated in the interview and not to worry if they can't remember details about this.
- Explain: confidentiality – when we write the report we won't use names and no-one outside the research team will know that they participated in the research, digital recording, length (up to half an hour) and nature of discussion (specific topics to address, but conversational in style), reporting and data storage issues.
- Any questions

## **2. General views about participating in the research**

*Aim: To act as a warm-up to the interview situation and provide a general overview about how the participants found the research*

- Overview of what taking part in the research involved
- Views on how the research project was explained
  - During recruitment (initial communications from the project team e.g. letter, information sheet, contact from the TU)
  - At the interview
  - At the workshop
  - Motivations for taking part
  - Expectations before participating in the research
  - Any additional information or communications that participants would have liked
- Overall what they felt about the experience
  - Ways in which it was a positive experience
    - Enjoyable
    - Interesting
  - Ways in which it was a negative experience
    - Frustrating
    - Uninteresting

## **2. Experience of the interview**

*Aim: To understand participants' experience of taking part in the depth interview and the impact of this on their views and behaviours*

*NB – Interviewer to emphasise that it is fine if participants can't remember as some of the interviews were quite a while ago. For participants who can't remember the interview, interviewer can emphasise that the main focus of this discussion will be on the workshops, which took place more recently*

- Views about taking part in the depth interview
  - Any concerns beforehand
  - Experience of the interview (any comments/observations on structure, content)
  - Views on any information provided by the interviewer
    - Where information was provided explore perceptions of whether it was helpful/unhelpful, clear/unclear, interesting/not
- Feelings during and after the interview
  - Ways in which it was a positive experience (enjoyable, interesting)
  - Ways in which it was a negative experience (frustrating, uninteresting)

- Impact of the interview on participant
  - Impact on level of interest in GM
  - Impact on views about GM
  - Impact on behaviour (e.g. did they speak to anyone about GM/ try to find out anything about GM after the interview)
  - Any other impacts
- Thank you payment
  - Explore views relating to level of payment
  - Any influence on decision to take part

### **3 Experience of the workshop**

*Aim: To understand participants' experience of the content and structure of the workshops and the impact of this on their views and behaviours*

- Expectations before the workshop
  - Understanding of the purpose of the workshop
  - Feelings about the workshop at this point
    - Nervous
    - Looking forward/ or not
- Views on the **introductory section** of workshop - background information about Natcen and FSA
  - How clear was the information about Natcen and FSA clear
  - Was the information about Natcen and FSA presented in a balanced way
  - How clearly was the purpose of the workshop explained
- Views on the **first exercise** where participants were asked whether they agreed or disagreed with the statement 'On balance, the advantages of GM foods outweigh any dangers' (*interviewer to describe the exercise if needed – participants were asked to position themselves in the room according to their views on GM*)
  - How clearly was it explained
  - Usefulness
  - Impact on the group, whether it worked as an ice-breaker
  - Impact on own views
- Views on **expert talk**
  - How clear was the information provided
    - Whether easy or difficult to follow/understand
    - Was the right information provided (anything missing)
  - Views on the level of detail of the information provided
    - Whether pitched at right level
    - Preference for more or less detail
  - How balanced was the presentation
  - How interesting was the presentation
  - How open was the expert about own position on GM
    - Preferences for more or less information about this
  - How did the presentation impact on their views
- Views on **first small group exercise**: looking at current uses of Genetic Modification
  - How clearly was the exercise explained
  - Views on the level of complexity/ format/ clarity of information provided
  - Views on how balanced the information provided was
  - Interest in the exercise and subsequent discussion
  - Impact on own views
- Views on the **second small group exercise**: looking at arguments about Genetic Modification, and their sources

- How clearly was the exercise explained
- Views on the level of complexity/ format/ clarity of information provided
- Views on how balanced of the information provided was
- Interest in the exercise and subsequent discussion
- Impact on own views
- Views about the **question board**
  - How clear was the explanation of the question board
  - Ways in which it helped or hindered discussion
  - Relevance of questions added to question board to participant's own concerns
- Views on final large group discussion including **changed opinion / same opinion exercise** and expert's response to question board and final questions
  - View of usefulness of exercise
  - Perceptions of value of group discussion
  - Views on the expert's responses to questions raised
    - Whether balanced
    - Clear or not
- Views about the workshop generally
  - Structure of the workshop (length, timings of the different exercises, ordering of the exercises)
  - Balance in terms of opportunities to contribute / discuss vs. the amount of time spent giving out information
  - Whether people felt comfortable contributing in the large group tasks
  - Whether small group tasks encouraged participation or not
  - Any views about the mix of participants in large and small groups
- Overall views on facilitation (*emphasise that you sit outside of the research team and the team is keen for feedback in order to improve future research*)
  - How clear were the facilitators in their questions and explanations
  - How balanced were they in the ways that they guided discussions
  - Did they allow everyone to contribute
  - Noting of questions on the question board
- How did the workshop compare with their expectations
  - Anything surprising
- Thank you payment and reimbursement of travel expenses
  - Explore views relating to level of payment
  - Any influence on decision to take part
- Impact of the workshop on participant
  - Impact on level of interest in GM
  - Impact on views about GM
  - Impact on behaviour (e.g. checking labels, looking out for info. on GM, reading about GM, talking to others about GM)
  - Impact on knowledge
    - Did they feel more or less knowledgeable about GM
  - Whether any perceived impacts will be short/medium or long term?
  - Any other impacts
- Perceived value of the workshop overall
  - For participants
  - For wider society

#### **4. General / closing issues**

*Aim: To provide an opportunity for participants to contribute any final thoughts on the overall research experience, thank them for their participation and explain the next steps for the study.*

- Any other views on how participating in the research has impacted on the participant
- Comparisons between the interview and workshop
  - Enjoyment
  - Interest
- Suggestions for how the process might be improved
- Anything that the participant would like to add

**Close, thank participant for taking part in the research, and let the participant that we will post them a £10 shopping voucher as a thank you for taking part**

# Appendix G Screening questionnaire for telephone recruitment

## P6240 BSA FOLLOW UP: Attitudes to Genetically Modified (GM) Foods Screening and recruitment questionnaire

Respondent serial number	«Serial_no»
BSA serial number	«BSA_serial_no»
Month of BSA interview	«Sample_month»
Respondent telephone number	«Tel»
Ethnicity	«Ethnicity»

**Outcome of screener – please tick box at end of interview-**

RECRUITED

REFUSED PARTICIPATION

Reason for refusal

«Title\_» «First\_Name\_» «Surname\_»  
 «Address1\_»  
 «Address\_2»  
 «Address\_3»  
 «Postcode\_»

**Notes:**

Interviewer Name:

Interviewer Number:

**CALLS RECORD (Note all calls even if no reply)**

Call no	Date dd/mm	Day of week	Time (24hr clock)	Notes
1	/		:	
2	/		:	
3	/		:	

4	/		:	
5	/		:	
6	/		:	
7	/		:	
8	/		:	
9	/		:	
10	/		:	

**Recruitment Script for Attitudes to GM Foods**

- **ASK TO SPEAK TO PERSON NAMED ON THE BSA DATABASE**
- **WHERE TWO PEOPLE FROM THE SAME HOUSEHOLD ARE LISTED, WE CAN ONLY INCLUDE ONE PERSON SO PRIORITISE AS NECESSARY TO FULFIL THE SAMPLE QUOTAS**
- **WHERE INFORMATION GIVEN BY THE RESPONDENT DIFFERS FROM THAT IN THE SAMPLE FILE PLEASE USE THE INFORMATION GIVEN DURING SCREENING TO FULFIL THE SAMPLING QUOTAS**

**Introduce self and where calling from (NatCen)**

*Good morning/afternoon/evening, my name is ..... and I'm calling from the National Centre for Social Research.*

**Remind respondent of their participation in the British Social Attitudes Survey**

*In x [cite month and year], you took part in the British Social Attitudes survey with one of my colleagues here at the National Centre and kindly agreed in the survey that we could contact you again to see if you would be interested in taking part in a face-to-face interview.*

**Remind respondent of purpose of study (should have received leaflet and letter in the post about research), who it is on behalf of (Food Standards Agency), who we are (NatCen) and why we're doing it.**

*We sent you a letter recently about a study we are currently conducting on behalf of the Food Standards Agency - did you receive it?*

**YES-** *Good I'm glad it reached you safely, have you had a chance to look at it?*

*Just to remind you, we're undertaking some research to understand people's views about genetically modified or 'GM' foods.*

*NatCen - which is short for the National Centre for Social Research is undertaking this research on behalf of the Food Standards Agency. NatCen is an independent social research organisation which carries out research on behalf of a variety of organisations.*

**NO-** *Would you like me to send it to you? If I could also just fill you in on the research now: We're undertaking some research to understand people's views about genetically modified or 'GM' foods.*

*NatCen- which is short for the National Centre for Social Research is undertaking this research on*

*behalf of the Food Standards Agency. NatCen is an independent social research organisation which carries out research on behalf of a variety of organisations.*

**If they ask what ‘genetically modified or GM foods’ means or say that they don’t know anything about it.....**

*You don’t need to know anything about GM foods. We are interested in finding out about the views of everyone – including people who feel that they don’t have strong opinions or knowledge about the subject. We will be asking about lots of things connected with this topic – for example how you make decisions about food you eat, why the issue of GM foods is or isn’t an important issue to you. We will also provide you with some information about GM foods and ask what you think of it. Taking part in the research will be like having a conversation; there are not right or wrong answers and you can say as much or as little as you like. You won’t need to prepare anything in advance*

**Explain that ringing to see if would like to take part in both an interview AND a discussion group. The interview will take place in May or June and the discussion group will take place a few weeks after the interview during the weeks of the 6<sup>th</sup> or 13<sup>th</sup> July.**

*We’re currently in the process of arranging the interviews and wondered if you would consider taking part.*

**If do not want to take part please ask why and make a note on the cover sheet. (Try to address any questions/ concerns the participant may have). If the participant says they don’t have a strong view about the subject, emphasise that they would still make a valuable contribution to the research.**

**If they do want to take part repeat that the second stage of the research - the discussion group -will take place during the weeks of 6<sup>th</sup> or 13<sup>th</sup> July and check that they are potentially available to take part during one of these weeks and are not away on holiday. We will aim to hold the discussion group at a time during these two weeks which is convenient for as many people as possible. If they are on holiday during this whole period then say that we regret that we won’t be able to include them in this research.**

*We need to make sure that a cross-section of people with different experiences are included in the study and for this reason I would just like to check whether the information we have about you from the British Social Attitudes Survey is correct. Would it be ok to ask you a few questions about yourself?*

**IF S/HE ASKS HOW LONG IT WILL TAKE, SAY ABOUT FIVE MINUTES.**

***Interviewer: enter any additions or amendments to what is shown on the label in the boxes below.***

**Q1 First, can I just check the following details:**

**(a) ...Your full name?**

**Title**

**Forename**

**Surname**

Mobile no

(or number at which it is easiest to contact you)

(b) Your age?

Please tick which category the person falls into here:

18-25	26-44	45-64	65+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(c) Gender - not necessary to ask but please fill in

Male	Female
<input type="checkbox"/>	<input type="checkbox"/>

Q2 Do you have children?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Q3 Do you have children currently living in your household? By child, I mean anyone aged up to 17 years

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Q4 Which ethnic group do you consider yourself to belong to? For example I say I am [interviewer state their ethnicity]...If participant is unsure, please use the options below as prompts

White	<input type="checkbox"/>
Black Caribbean	<input type="checkbox"/>
Black African	<input type="checkbox"/>
Indian	<input type="checkbox"/>
Pakistani	<input type="checkbox"/>
Bangladeshi	<input type="checkbox"/>
Chinese	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>

**Q5 Do you consider yourself to hold religious beliefs?**

Yes	No	Don't know / unsure

**Q6 What is your main daytime activity?**

Full time employment	
Part time employment	
Unemployed	
Looking after children / home	
Student	
Retired	

**Q7 Would you say that you live in a rural area or village, a small or middle-sized town or a larger town or city?**

Rural area or village	Small/ medium town	Larger town/city

*Thank you for answering those questions.*

**IF PARTICIPANT DOESN'T FIT QUOTA**→ *I'm afraid that we aren't able to include you in this particular research as we are trying to interview a wide range of different people with different circumstances and unfortunately we have already filled the quota into which your responses place you. **Thank you very much for your time.***

**IF UNSURE WHETHER PARTICIPANT FITS QUOTA**→ *We need to see whether we can include you in this research. Would it be alright for someone to call you back and let you know if we can interview you as part of this research? **Thank you very much for your time.***

**IF PARTICIPANT FITS QUOTA**→ *We'd like very much to interview you as part of this research and to invite you to a follow up discussion group. Is that something that you would be interested in?*

**Explain what the research will involve to people that fit the quota..**

*The research will happen in two stages. The first stage will involve taking part in an interview with one of my colleagues, either in your own home or somewhere else if you prefer. Interviews last approximately one hour and you will receive £25 as a thank you for giving up your time. There is no need for other members of the household to be present. During the interview, we would like to hear about:*

- *Some background on how you make decisions about the food you buy*
- *Your views on GM foods including:*
- *How important an issue it is to you, why it is or isn't something that you're interested in, what you think about the pros and cons of GM foods.*

All interviews are confidential and responses will be reported anonymously. You are not expected to have any prior knowledge of the subject

You are also invited to attend a follow up discussion group which will take place after the interview in the week of either 6<sup>th</sup> July or 13<sup>th</sup> July. The group will last approximately three hours and will take place in the Glasgow area/ Greater Manchester area (state city as applicable). We will aim to hold the discussion groups at a time which is convenient for you and will give you more details about this when we come to do the interview. You will receive £50 plus travel expenses as a thank you for taking part in the group. During the discussion group we would like to:

- Find out about your views in more detail
- Provide you with some more information about GM foods and discuss what you make of it

You would not need to prepare anything before coming along

How does this sound? Would you be willing to take part in the interview and discussion group (assuming that it is held at a convenient time for you)

**IF THEY ARE WILLING TO TAKE PART IN THE INTERVIEW BUT NOT THE DISCUSSION**

**GROUP** – Unfortunately we are looking for people who are willing in principle to take part in both stages of the research so we may not be able to include you in this research.

Is it ok for the interview to take place in your own home? If you would like the interview to be held in another location, it needs to be somewhere private and quiet enough for the interview to be recorded. **If interview to take place anywhere other than home please make a note of this.**

The interview will be digitally recorded so that we have an accurate record of everything that you tell us. It also enables the interviewer to listen carefully to what you are saying and ask follow-up questions to help us fully understand your experiences. The recording will be transcribed and will not have your name on it and no-one outside the research team will hear this recording. Is that ok? **If not ok, try to reassure as we can't interview if we can't record.**

**Explain that the interviewer will get in touch to arrange a date and time for the interview. Ask when the best times are for the interviewer to call and the best number to reach them on.**

**IF YOU ARE CALLING BEFORE THE 11<sup>TH</sup> MAY - WE ARE ABLE TO CONDUCT INTERVIEWS FROM 11<sup>TH</sup>-13<sup>TH</sup> MAY AND THEN FROM THE 5<sup>TH</sup> JUNE. PLEASE CHECK IF THEY ARE POTENTIALLY AVAILABLE BETWEEN 11<sup>TH</sup>-13<sup>TH</sup> MAY**

**PLEASE CONFIRM THE FOLLOWING DETAILS:**

Name of participant:

Times when it is best to call and arrange the interview:

Preferred location of the interview (home or elsewhere):

Potentially available between 11<sup>th</sup>-13<sup>th</sup> May?:

Availability in week of 6<sup>th</sup> July:

Availability in week of 13<sup>th</sup> July:

**Explain will receive a phone call over the next few weeks to arrange the date and time of the interview** *If you have any further questions you can get in contact with the researchers using the number in the leaflet which is 020 7549 9541 (ask for Ruth Sheldon)*

**Thank and close** - *Thanks very much for agreeing to take part. We hope you enjoy the interview and discussion group.*