

REPORT OF THE VISITING GROUP TO THE INSTITUTE OF FOOD RESEARCH

5-9 SEPTEMBER 2005

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WHOLE INSTITUTE ASSESSMENT

SUMMARY ASSESSMENT

1. The VG concluded that there was a continued need for a UK food science research institute, providing independent advice to the public and the food industry, underpinning UK government strategies to promote food safety and healthy eating as part of a policy to reduce the incidence of food-borne illness and infection, chronic disease, cancer and obesity. The VG felt that it was important that the UK public had confidence in the research underpinning food safety and diet and nutrition advice. The VG felt that the relationship between IFR and the food industry should be carefully managed so as not to undermine this confidence.

Recommendation 1

The VG endorsed the continued need for a food science research institute in the UK which could provide independent, trusted, advice to the public and the food industry, and to underpin government strategies to promote food safety and healthy eating. IFR must carefully define its future role with respect to interactions with industry and the public.

2. In the view of the VG the institute was providing leadership in many diverse aspects of food research. For example: developments that would underpin strategies for cancer prevention, including validation of biomarkers for colorectal cancer, and clarification of the protective role of glucosinolates; gastrointestinal pathogen control by lactic acid bacteria; nutrition studies which incorporated unique physiological, whole-body approaches and advanced techniques; transcriptomic analysis of *Salmonella*; physiology of *Clostridium botulinum*; and work on aspects of food structure such as emulsions, starch organisation and biopolymers at surfaces.
3. The VG supported the main elements of the director's proposed new scientific vision for the institute for IFR potentially to become a world-leading contributor to the harnessing of food for health and controlling food-related disease, and expressed strong support for the role the new director had played in the development of this strategy. The VG endorsed the key areas identified for development - gastrointestinal tract biology; nutrition, diet and health; food innovation and food safety - and stressed the importance of following through on these changes as soon as possible.

Recommendation 2

The VG was very supportive of the director's new scientific strategy for the institute. While appreciating that this was work in progress, the VG recommended that the proposed changes be followed through as a matter of urgency.

4. In the light of the new strategic plan the institute's research had been reorganised into seven research programmes. Within this structure, there were many examples of established strong science but the VG felt that there was much more the institute could do to maximise the benefits from these

strengths. The VG identified a need to improve both the focus within some programmes and the scientific cohesion between them. IFR should build on its historical strengths in, for example, phytochemicals, micronutrients, gastrointestinal research, and microbiology, by fully embracing state-of-the-art scientific approaches to advance these areas. In fields which the institute could not cover directly, such as cardiovascular disease and obesity, it should develop wider skills sets through strategic alliances with other research organisations.

5. The VG supported the director's intention to make a number of key new appointments as part of the new strategic plan, and believed that such appointments could be used to bring about improved focus within, and cohesion between programmes. The VG identified specific scientific areas in which high quality appointments could be made to good effect, including: gastrointestinal microbiology, to enable the institute to widen its current focus from lactic acid bacteria; molecular immunology, to enable better translation of microbiological work to the mammalian host; and molecular microbiology, to enable the institute to achieve a leading position in *Campylobacter* research.
6. In recruiting to new posts, the VG considered it to be essential to attract high calibre applicants with energy and vision, and with leadership skills to match their scientific performance. IFR needed to become an attractive location for the best scientists, including senior independent fellows. The institute should consider novel ways to attract the best candidates, for example, using professional recruitment specialists and offering enhanced inducement packages.

Recommendation 3

While recognising the strong scientific elements within the new structure, the VG was concerned by the apparent lack of focus within and cohesion across some of the programmes at IFR. It recommended that the institute focus on developing its existing strengths and, where necessary, widening its skills base through strategic collaboration, to increase the impact and reach of its science.

Recommendation 4

The VG recommended that a number of key scientific appointments be made in areas of expertise which would benefit the research output from all programmes at IFR and that, for proposed new appointments, the director should aim to recruit respected scientists with excellent leadership and management skills. This should encourage a more dynamic research environment making IFR a more attractive place to work for the best scientists, including senior fellows.

7. The VG recognised that the development of bioinformatics and systems biology capability at IFR was essential for the implementation of the new strategy, and to maintain competitive advantage. However, it was not clear to the VG how this would be achieved. It was not convinced that the proposed internal 'Partnerships' in their current form, were fit for purpose. Moreover, while the proposed D'Arcy Thompson Centre for Integrative Systems Biology, a joint venture with the University of East Anglia (UEA) and the John Innes Centre (JIC), would facilitate closer interaction with computer

scientists across the Norwich Research Park, this alone would not provide the solution to IFR's need to develop expertise linked directly to its own programmes. The VG agreed that the main priority was to appoint a new bioinformatician, as long as this post was focused on development of innovative bioinformatics skills in whole genome analysis and modelling (see also Recommendation 7).

Recommendation 5

The VG recommended that IFR urgently develop innovative bioinformatics skills as part of the new strategy for the institute, and that the institute develop further strategies to ensure an adequate systems biology capability. Although welcome, the proposed D'Arcy Thompson Centre for Integrative Systems Biology with UEA and JIC would not fully address the needs of the institute and the VG recommended that the institute needed to appoint a new bioinformatician focused on development of innovative skills in whole genome analysis and modelling.

8. The VG was generally disappointed with the publication outputs of most programmes considering the high level of BBSRC support through the Core Strategic Grant (CSG). In particular staff needed to publish more often in higher impact journals and also consider publication in a wider range of relevant journals including medical ones. There was little evidence of a publication strategy aimed at targeting higher impact factor journals.

Recommendation 6

The VG recommended that the institute develop a publication strategy to increase the number of papers published in high impact relevant journals and to consider publication in journals that reach beyond the traditional food research arena.

COLLABORATION

9. The VG noted examples of good individual collaboration with universities, but gained the overall impression that IFR operated within a somewhat insular, inward-looking culture. Researchers were not always clearly aware of their main potential collaborators and/or competitors at either the UK or the global level. Many examples of collaborations cited in the written submission appeared to be informal and based on personal contacts and not formalised through funding routes.
10. The VG felt that IFR would benefit from a systematic review of its strategy for developing collaborations including those with universities and, where appropriate, the institute should develop formal strategic alliances with key university departments from a wider range of universities in the UK and further afield, in particular with leading microbiology, nutrition and physical sciences groups.
11. The VG also identified good examples of collaboration with research institutes, and commended in particular the work with the BBSRC-sponsored Rothamsted Research (RRes) on cereal protein structure and food allergy. However, the VG was not convinced that all opportunities for collaborative

research with other UK research institutes had been fully explored or sufficiently developed. For example although there was effective and productive collaboration with the JIC on the sharing of equipment and resources, closer cooperation was needed in key overlapping areas of science such as phytochemistry; furthermore there was little evidence of significant collaboration with the BBSRC-sponsored Institute for Animal Health (IAH) on microbiology; there were also opportunities to develop bioinformatics capacity with other institutes and the formal links with the Rowett Research Institute in diet and health research did not appear to be fully developed.

12. The Norwich Research Park (comprising IFR, JIC, the Sainsbury Laboratory [SL], UEA and the Norwich and Norfolk University Hospital [NNUH]) offered significant potential to develop critical mass in a number of relevant areas key to the IFR research strategy. There were good arrangements with the hospital through collaborative work with consultants on human trials and access to human tissue samples; the D'Arcy Thompson Centre for Integrative Systems Biology offered potential for developing closer links with UEA computer scientists (though these were as yet few in number); and the VG welcomed the sharing of technology platforms with JIC. However the extent and depth of collaboration across NRP in general was not apparent to the VG. IFR would benefit from more formalised strategic alliances with key NRP organisations, for example building on and formalising existing links with the UEA Medical School, and closer interaction with JIC in research activity. The VG welcomed the recent award from the regional development agency intended, in part, to support the closer integration of research excellence and commercial activity across NRP, and felt that this represented an opportunity for IFR to become a focus for a strategic alliance in diet and health.

Recommendation 7

The VG recommended that the institute carry out a systematic review of its strategy for developing collaborations in specific scientific areas, including with universities and research institutes. This should initially include a benchmark exercise against which future changes could be measured. Specifically, it recommended that:

- i) the institute develop more formalised key strategic alliances with university departments in the UK, and possibly further afield, including leading microbiology, nutritional and physical sciences groups;*
- ii) IFR develop its links with other BBSRC-sponsored institutes, including the development of formalised Cross-Institute Programmes (CIPs). In particular, opportunities for closer integration should be explored with JIC in phytochemistry; IAH in microbiology and these and other BBSRC-sponsored institutes in the development of bioinformatics;*
- iii) IFR develop more formal alliances within the Norwich Research Park to maximise the potential benefits of collaborative research;*
- iv) IFR establish concrete links with the new UEA medical school.*

13. The VG welcomed the number and diversity of IFR's overseas links, particularly within the EU, including the institute's leading role in the European Technology Platform on Food for Life, and its involvement in the co-ordination of EU Framework Programme (FP) 6 research projects. However, although IFR had attracted a large number of Marie Curie

fellowships, these were mostly short-term placements that did not result in significant outputs. Some had resulted in permanent jobs at the institute, but the VG was not convinced that internal promotions necessarily led to the world-class appointments required to implement the new science strategy (see Recommendations 3 and 4). The VG expressed concern that very few established overseas scientists chose to spend significant time at IFR.

Recommendation 8

The VG commended the leading role IFR was taking within EU research which had resulted in a large number of Marie Curie fellowships. However the VG recommended that mechanisms be put in place to encourage established leading scientists from overseas laboratories to spend significant and productive time at IFR, with measurable outputs such as joint publications.

STRATEGIC RELEVANCE

14. In the view of the VG the research programme at IFR was particularly closely aligned to the BBSRC Strategic Plan 2003-2008 and to the priorities for the healthy organism, and bioscience for industry. Elements of the research portfolio were also relevant to the integrative biology and sustainable agriculture priorities. The VG agreed that the institute's research was relevant to the FSA Requirements Documents and to particular Defra programmes (eg food quality).
15. It was clear to the VG that IFR research was contributing to public good and to the quality of life. By providing a source of independent advice to both government and industry it was making a valuable contribution to improving food safety and the human diet. IFR had a long history of significant contributions to UK food policy including research underpinning the importance of fruits and vegetables in the diet, supporting the five-a-day advice from the government; the importance of dietary fibre; the role of n-3 fatty acid consumption from fish; key aspects of mineral nutrition and colonic health; and, more recently, the importance of folates and advice on the shelf-life of chilled foods.
16. The VG commended the leading role played by IFR in the Food and Health Network (FHN), which was providing an effective forum for national and international industry-science networking. There was evidence that this was leading to the development of research projects relevant to industry's needs. The FHN was an excellent way of stimulating industrial collaboration, interaction and cross-fertilisation with IFR's research areas. The VG supported the initiative on horizon scanning via research clusters in the FHN. As the focus of effort by IFR was with major players from the food industry, the VG felt that it was important for the institute to ensure that the needs of the small and medium enterprises (SME) sector of the food industry were also met.
17. The VG was concerned that institute staff were not always pursuing opportunities to obtain external funding, to add to their CSG funding from BBSRC, and were not always fully engaged with sponsors. It was felt that IFR

could do more to set the research agenda with key external sponsors including FSA, industry and charities. This would require the institute to adopt a more outward-looking approach with senior individuals being ‘champions’ for the institute (eg by increased participation on advisory bodies etc). The VG wished to stress that most senior staff should be expected to take part in all kinds of networking activities such as holding office in learned societies, journal editing, examining and similar commitments that would place them in a much wider community.

18. The VG emphasised that the long-term role of the institute would depend on the quality and relevance of its science and ensuring mechanisms were in place to disseminate and to exploit it fully. Successful development and implementation of the new strategic plan was crucial for the institute’s future. In the VG’s view, improving the quality of the scientific output should also lead to stakeholders coming to IFR rather than the institute having to gain an external foothold (see Recommendation 6).

Recommendation 9

The VG commended the institute for its leading role in the Food and Health Network, which was providing an excellent forum for industry-science networking. The VG recommended that, to supplement the major industry players, closer links be formed with the SME sector. With reference to broader strategic relevance, the VG recommended that IFR scientists be more proactive in exploring all opportunities for funding and, in particular, that staff adopt a more proactive approach to setting the research agenda by increased participation in relevant research and advisory structures of its principal sponsors.

SCIENCE AND SOCIETY

19. The VG commended the breadth of communications activities described. The communications personnel were enthusiastic and committed, working well as a team, and shared expertise to achieve a good quality of output, although quantitative metrics of output, whether relative or absolute, were not provided. The number and breadth of links, collaborations and networks with which institute staff participated were described and were highly commendable, and should enable continuing coordination with other organisations and ensure reach of the institute’s activities across the UK and Europe. The cost-effectiveness of the communications activities could not be ascertained from the information provided; it was evident that the institute put a lot of resource into this area and there was little doubt that each member of the communications team was fully engaged with their work.
20. There were many competing messages about diet and health in the media, and IFR was well positioned to make its contribution. It was evident from the presentation that the institute had already had many successful interactions, particularly with local media, but more could always be done in terms of pushing forward the institute’s agenda nationally and internationally, as well as reacting to misinformation (as commonly found in the tabloid press).

21. The quality of the social science at the institute was evidenced by published papers and discussion of the area. The social scientists concerned were well positioned and networked within their own communities and were working in a dynamic and growing area. The potential outputs of their work would have uses beyond the academic community, including influencing strategies for public engagement and communication. It would therefore be of great value to the institute for there to be much more cross-fertilisation of ideas between the social science and communications teams. Although during the presentation a commitment for closer working was given, the institute was currently missing an opportunity and would be well-advised to ensure that social science thinking influenced communications strategies and vice-versa. At present, there were inconsistencies that could usefully be explored. For example, while public relations and science and society activities were described as a continuum in the presentation, the written submission argued for a clear discrimination between types of communication depending on the context and aims.
22. The presentation provided evidence of valuable training opportunities for those scientists who wished to get involved. However, further embedding of communications activities within the core business of the institute would be beneficial. The desired outcomes of the communications strategy could be better defined and linked with the institute's overall strategy, making clear to the institute's scientists the value and necessity of this kind of work for IFR and encouraging more scientists to become involved. Other initiatives, such as positive recognition for those who give up their time to some form of public engagement, could also be investigated.
23. Of the communications activities described, the VG wished to highlight the website which provided clear information in a format designed appropriately for the target audience. Strategies to involve members of target audiences in the development of various pages should be applauded and encouraged. However, the VG took the view that clearer statistics on usage of the website (both comparative and absolute) would be helpful for evaluating its effectiveness.
24. Evaluation of public engagement activities was acknowledged to be both complicated and resource-intensive. However, when developing an outcome-led strategy, evaluation can be invaluable for targeting and refining future activities. The VG felt that it was important that any evaluation should be transparent and objective; for many communications activities a light-touch approach would be sufficient. It was possible that suitable evaluation processes were in place and were just not described, either during the presentation or in the written submission (which was hard to follow in places and did not do justice to the quality of current activity).
25. The VG felt overall that the institute's communications and social science activities should be commended. The VG felt that these important activities should be retained within the institute. With more integration between the two and also with the rest of the institute's business, and a more stream-lined

outcome-led approach to communications in particular, the institute was very well-placed to take advantage of its unique position.

Recommendation 10

The VG recommended greater interaction and understanding between the social science and communications teams, and that these activities should be retained as an in-house function central to the institute's business. Communications activities and thinking, once integrated with social science, needed to be embedded within the institute's ethos and become part of the daily lives of the institute's scientists. Some transparent light-touch evaluation processes would help to record activity and to design future events and strategies.

KNOWLEDGE TRANSFER (KT)

26. The VG supported the major conclusions of the Knowledge Transfer (KT) report. In key interactions with universities and within the NRP it was, in the view of the VG, important to ensure appropriate formal structures were in place (see Recommendation 7). Moreover, with key sponsors the VG felt that the institute should take a more positive role in setting the research and policy agenda (see Recommendation 9).
27. The VG supported the development of 'Exploitation Platforms' which it felt in most cases both represented imaginative developments and also presented viable business opportunities for the institute. The VG noted that, if they were to be successful, these would require careful management and longer-term support from IFR, with detailed business plans and outside support if necessary. There should also be an ongoing development of new platforms as exploitable work emerges from research programmes. The VG stressed the importance of feeding back these developments into core science programmes and renewing the science base as valuable skills could be lost from the institute as a result of moving staff into the Platforms.

Recommendation 11

The VG supported the development of Exploitation Platforms at IFR where this represented an imaginative development and viable business opportunities for exploiting IFR's research. The VG recommended the development of realistic actionable business plans, with outside support as necessary, and that the institute ensure that the science underpinning the platforms was fed back into the institute and renewed so that key skills were not lost from the institute.

STUDENTSHIPS AND FELLOWSHIPS TRAINING (SFT)

28. Following the meeting with students the VG felt that the SFT report was an accurate reflection of student and fellowship training at the institute. The VG was concerned at the apparent lack of importance placed on seminar attendance in the past, but pleased to see that there was now a much more structured approach in place, with students reporting regular attendance.

29. The VG strongly reiterated the SFT recommendation that there was an urgent need to increase student numbers across the whole institute. The full report is at Annex 2.

BUSINESS PLANNING AND ORGANISATION

30. While it was recognised that these had recently undergone a major change that was still developing, management structures, including processes for the allocation of resources in programmes, were not clear to the VG. There did not appear to be a consistent approach to management across different programmes, and levels of integration within and between programmes varied.
31. Financial information as presented in the written submission was not at all transparent to the VG. It was not possible to relate sources and amounts of funding with areas of research within programmes. This arose partly from the requirements of the VG guidelines, where assessment was at the programme level, and partly because the new structures did not map clearly on to funding streams in the previous elements of the structure. Consequently it was difficult for the VG to comment on value for money or research productivity.
32. The VG nevertheless felt that there were insufficient connections between the seven research programmes, with no clear mechanism to achieve multi-disciplinarity and integration, a key part of the new strategic plan. The VG accepted that this might be partly because the implementation of the strategic plan was work in progress, but felt that implementation should be carefully thought through, documented and managed. It was the VG's view that, in the longer-term, a full matrix management structure might best serve the needs of the institute: that is the responsibility for the two main elements in research (people and programme) lie with two separate people. There would be a programme manager responsible for getting the programme agreed and funded, and responsible for generating and managing the project output against agreed deliverables. The staff would be led by a science leader, normally a well-recognised and respected scientist in their area, who would be responsible for the quality of science, staff development, and the facilities (labs etc). Normally a management committee comprising the programme managers and the science leaders would meet regularly to review progress on both axes and to resolve any issues resulting from the matrix structure. As part of this process, the VG thought that closely related programmes should merge (eg H1 and H2; S1 and S2; G1 and G2). Breaking the connection between programmes and funding streams might encourage more rapid and deeper integration. The VG emphasised that a reduction in programme numbers should not mark a return to the previous divisional structure: a full matrix structure should enable individual project leaders to be judged on their individual efforts and outputs.

Recommendation 12

Although strongly supportive of the scientific direction in the new strategic plan, the VG felt that the current programme structure was somewhat artificial. It recommended that the institute consider if, in the longer term, closely related

programmes might be merged and managed in a matrix system which separated funding streams from individual programmes. This should encourage closer integration and greater financial transparency, and enable individual project leaders to be judged clearly by their results.

33. The VG was also concerned about the development and mentoring of staff, particularly those in mid-career. There appeared to be no formal routes or structures for more junior staff to contribute to the development of the institute, or for junior scientific staff to take initiating roles in identifying new projects. The VG felt that mechanisms needed to be implemented to ensure that these key members of staff remained motivated. This might be achieved by, for example, wider delegation (following training) of roles such as project management within programmes. Further consideration should also be given to the possibility of staff gaining PhDs through publications.
34. Succession planning also appeared to be weak with an apparent imbalance in age and band distribution in most programmes and in the institute as a whole. Clear procedures for staff development and succession planning should be developed as a matter of urgency.

Recommendation 13

The VG recommended that career development strategies be developed as a matter of urgency to address the need to identify and encourage young and mid-career staff to grow into more senior roles. Furthermore the age profile of the institute was such that the VG recommended that effective succession planning be implemented urgently.

35. The VG was not convinced by the rationale for development of internal 'Partnerships' or by their role or effectiveness in programmes. These appeared to the VG to be ad hoc activities that were insufficiently integrated into the research programmes; nor was it clear that they had enjoyed the support of all the staff concerned.

Recommendation 14

The director should reconsider the rationale for the Partnerships at IFR. In the view of the VG they were not providing effective mechanisms for the integration of key skills across programmes.

RESEARCH FOOTPRINT

Research footprint assessment summary					
Number of programmes in each assessment category					
BBSRC-funded	High international	Inter-national	High national	National	Unsatisfactory
			1		
Mixed programmes	High international	Inter-national	High national	National	Unsatisfactory
		3	3		
	Outstanding	Good	Satisfactory	Unsatisfactory	
	2	4			

Programme

Assessment rating

	BBSRC	External
G1: Gastrointestinal Biology and Health (mixed)	High National	Good
G2: Commensals and Microflora (mixed)	International	Outstanding
H1: Phytochemicals and Health (mixed)	High National	Good
H2: Micronutrients (mixed)	International	Good
F1: Structuring Foods for Health (mixed)	International	Outstanding
S1: Pathogens – Molecular Microbiology (BBSRC)	High National	-
S2: Pathogens – Physiology and Predictive Ecology (mixed)	High National	Good

ANNEX 1: VISITING GROUP MEMBERSHIP AND ACKNOWLEDGEMENTS

MEMBERSHIP

- i. The Institute of Food Research (IFR) was reviewed by a Visiting Group (VG) between 5 and 9 September 2005. The Group comprised:

Professor D Kell FIBiol (chair)	University of Manchester
Dr J Buttriss	British Nutrition Foundation
Professor S Foster	University of Sheffield
Professor P Fryer	University of Birmingham
Professor T Humphrey	University of Bristol
Mr A Kyriakides	Sainsbury's Supermarkets Ltd
Professor T MacDonald*	Barts and the London School of Medicine
Professor I Norton	Unilever
Professor C Penn	University of Birmingham
Professor H Powers*	University of Sheffield
Professor S Ross-Murphy	King's College London
Professor C Shortt	McNeil Nutritionals Ltd
Professor A G J Voragen	Wageningen Agricultural University
Dr A Wadge	Food Standards Agency
Professor C Williams	University of Reading

**Present for part of the VG*

- ii. The Group was joined by additional experts to review the institute's contributions to the Science and Society agenda:

Dr J Schollar	National Centre for Biotechnology Education, University of Reading
Dr J Gregory	University College London

- iii. The following people attended from BBSRC Office: Professor Julia Goodfellow; Professor Nigel Brown; Dr Doug Yarrow; Dr Bill Eason; Mr Phil Rees; Dr Huw Tyson; Miss Caroline Dow.

ACKNOWLEDGEMENTS

- iv. The VG was most grateful for the welcome and hospitality extended by the director and staff of the institute, which had done much to contribute to the smooth-running of the visit. The VG also appreciated the considerable amount of background work that had been undertaken by the institute in preparation for the visit.

ANNEX 2: REPORT ON STUDENTSHIPS AND FELLOWSHIPS TRAINING ASSESSMENT

BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL

2005 INSTITUTE ASSESSMENT EXERCISE

STUDENTSHIPS AND FELLOWSHIPS TRAINING (SFT) ASSESSMENT

VISIT TO THE INSTITUTE OF FOOD RESEARCH: 4 NOVEMBER 2004

INTRODUCTION

1. The Institute of Food Research (IFR) was visited by a BBSRC Studentships and Fellowships Training (SFT) assessment panel on 4 November 2004. The SFT assessment forms part of the Institute Assessment Exercise (IAE). The SFT panel comprised two members of the Committee on Studentships and Fellowships (CSF): Professor Steve Yeaman (University of Newcastle; chair) and Dr Mark Edwards (Heptagen Limited). The panel was accompanied by staff from BBSRC Swindon Office: Dr Ian Lyne (Head of Postgraduate Training and Fellowships) and Dr Bill Eason (Evaluation and Policy Unit).
2. The visit was informed by a background paper prepared by the Institute, which provided the basis for a meeting with senior Institute staff with designated responsibilities for postgraduate and postdoctoral training. The panel subsequently met with a group of postgraduate students from IFR for an informal, free-ranging and confidential discussion about their experiences and expectations of the training provided by the Institute. In addition, the panel viewed examples of laboratory and office accommodation used by students at IFR, together with some of the site's specialised facilities. At the time of the visit there were no recipients of BBSRC David Phillips postdoctoral fellowships (or equivalent early career fellowships) at IFR.
3. In assessing its provision of postgraduate training, the panel had regard to IFR's effectiveness in meeting the requirements of the Joint Statement of the Research Councils Skills Training Requirements for Research Students (http://www.bbsrc.ac.uk/funding/training/skill_train_req.html) including:
 - Research skills and techniques
 - Research environment
 - Research management
 - Personal effectiveness
 - Communication skills
 - Networking and team working
 - Career management

In making their assessments the panel considered a range of factors which contribute to the delivery of the requirements set out above, including the

environment and facilities; links with universities; supervisory practice; generic training and pastoral care and the student community.

4. The panel provided an overall assessment in three key areas:
 - provision of research-based training
 - provision of generic, non research-based training
 - the quality of the training environment
5. Each aspect was assigned to one of three broad categories
 - (i) good
 - (ii) adequate
 - (iii) unsatisfactory

PROVISION OF RESEARCH-BASED TRAINING

Overall rating: Adequate

6. The panel noted that the Institute of Food Research (IFR) was a multi-disciplinary food science institute working on food safety, diet and health and food materials and ingredients. The director reported that IFR was part of the Norwich Research Park (NRP) which included the John Innes Centre (JIC), the Sainsbury Laboratory, Plant Biosciences Ltd, the University of East Anglia (UEA), and the Norfolk & Norwich University Hospital. At the time of the visit it was reported by the director, that NRP housed some 6500 research scientists, mainly working in plant and microbial science, food, health, the environment and computer science; there were 215 scientific staff at IFR.
7. At the time of the visit, there were sixteen PhD students at IFR. About three-quarters were BBSRC sponsored (made up of similar numbers of BBSRC Committee, Quota, and CASE students). Smaller numbers were funded through a range of sources including direct industry support and funding by NRP. Students were located within a research Group, within one of three scientific Themes at IFR. Students were normally registered at UEA, though it was possible for students to register at other Universities if there were strong grounds for doing so, and if the project genuinely involved collaboration with another lab. Two students fell into this category.
8. The numbers of new students registering each year had declined in recent years to about 5-6. The director explained that this was in part because IFR no longer funded studentships directly and because the Institute had fewer studentships from BBSRC. The director, who had recently been appointed, stated that the ideal intake would be 10 per year, giving a student population of around 30. This would represent one student each year for each programme. The panel supported the intention to increase student numbers. In particular, opportunities to increase the numbers of students funded by industry should be fully explored. Any fall from existing levels could have an impact on the critical mass of the IFR student population. At the time of the visit any potentially adverse effects of low numbers on critical mass were being partly

offset through the Institute's location within NRP where larger numbers of students were located.

9. UEA and IFR postgraduate committee and administrative structures were interlinked. Through its Graduate Studies Committee (GSC), IFR had delegated responsibility from UEA for postgraduate training and was the broad equivalent of a UEA school. IFR staff were recognised as supervisors and followed the UEA Code of Practice. All IFR students (including those not registered at UEA) had full access to UEA resources (including support and training services as well as access to social and sports facilities). A staffed Graduate Studies Office (GSO), servicing students at NRP, was located at JIC.
10. The GSC was responsible for ensuring the quality of training. In addition to the three Heads of Theme, the GSC included the Student Welfare Officer, the Training Officer, a member of the GSO and the Chair of JIC's Graduate Studies Committee as well as student representatives. The panel was satisfied that the role of the GSC in vetting projects and in recruiting the best students was sufficiently thorough. Student projects had to be approved by the GSC. Projects were advertised up to one year ahead and the best students were matched to a range of projects, which covered all three Themes. It was reported by Institute senior management that there were approximately 10 eligible applicants for each studentship vacancy. Studentships were advertised in the scientific press, at careers fairs and by direct mailing to key universities.
11. Student training fitted within the IFR Human Resources Strategy that applied to all staff at the Institute. During the induction process the student's training needs were assessed; this assessment formed part of an on-going Personal Development Plan (PDP) in which skills training was identified. The PDP system at IFR was still being rolled out; it would apply to all staff by 2005. Specific research skills training was identified and tailored to the individual student. Although responsibility for training decisions rested with the principal supervisor there was also a strong emphasis on self-assessment. Research skills training opportunities included a range of short courses within the Science Schools at UEA (set out in the UEA Training Catalogue Supplement and which may be taken as part of the Transitions II training options in year 2; see section 19) as well as in-house training in techniques used at IFR. Additionally students could receive individual training either in single courses or as time spent in other laboratories, normally off-site. The Training and Career Development Committee (TCDC) monitored the quality of training provided. At present there was a single PDP Mentor for IFR, distinct from the mentoring role provided by the advisor in the Supervisory Committee (see section 13). The PDP was formally reviewed by the PDP Mentor after two years, and then individual training targets were set. In the case of students this related to progression in their final year (e.g. thesis planning). Training options were identified and referred to the TCDC. The panel welcomed the use of PDPs although it was noted that the system had only recently been introduced and it was too early to judge how the PDP would work in practice. The panel recommended that the UEA Training Catalogue Supplement should be widened to include lists of research skills training available from all sources that had been used by IFR students.

12. Separate proposals for postdoctoral training and career development, including that for independent fellowships, were outlined by Institute senior management. Student supervision was seen as an essential early step in fellowship training. Although IFR did not currently have any fellows, the panel welcomed the preparations that had been made by the Institute in this respect.
13. Each student had a Supervisory Committee comprising a principal supervisor, a co-supervisor and an advisor. The advisor was normally a senior member of staff who was also an experienced supervisor, not necessarily from the same research Group as that of the student. While the panel endorsed this overall approach, it felt that there was some confusion over the precise roles of the different individuals. The role of the advisor in particular was not clear. Some students did not see the advisor as being a fully independent and objective source of advice; they felt they were often too close (scientifically and managerially) to their principal supervisor. Students also cited a number of different sources of support that they would use if they felt they could not talk to their principal supervisor: the GSC, the GSO and the Student Welfare Officer. Although students were able to choose their advisor this was done within their first month, based on limited information. A clear statement was needed about who was responsible for the essential elements of supervision and mentoring within the Supervisory Committee. The panel felt that student decisions about choice of advisors might more sensibly be delayed. Additionally, further clarification was needed of how support and mentoring roles provided elsewhere were distinct from those provided by the Supervisory Committee.
14. The panel was satisfied with arrangements for supervisor training. All principal supervisors were required to attend a one-day training course provided by UEA. This covered expectations set out in the UEA Code of Practice and discussion of case studies and problem solving. It was reported by Institute senior management that all IFR principal supervisors had been on this course. Additional courses were also available to other Supervisory Committee members on a voluntary basis.
15. The Supervisory Committee monitored student progress every quarter to ensure any problems were identified quickly. All documentation, including reports and agreed action were kept in a student folder. Students were required to submit a report at 6 months outlining key findings and plans for the next 12 months. At 18 months students prepared a report and made an oral presentation to a Transfer Committee who prepared a report including whether the student should pursue an MPhil or a PhD. This practice differed from most other institutions where upgrade decisions were normally made within the first year. Earlier decisions about upgrading were also favoured by the students the panel spoke to. Although the panel accepted that there was a high level of monitoring, and that it was possible to bring forward the Transfer Committee in particular cases, it felt that progression to a PhD should be routinely decided within the first year.

16. All IFR students gave talks at Group and Divisional meetings within IFR and had the opportunity to present a poster in an annual JIC Science Meeting. Students were encouraged to present their work at national and international meetings. Meetings at the Group, Theme and whole Institute level offered opportunities for students to attend research seminars; all students were expected to give at least one seminar at IFR. IFR organised seminars with external speakers, approximately every 2-3 weeks. Additionally, there were extensive programmes at JIC and UEA, including a regular Friday seminar at JIC. However, attendance was not mandatory and students appeared reluctant to attend seminars that were not directly related to their own specific discipline. The apparent lack of importance placed on attendance, missing an opportunity to foster broad interdisciplinary awareness, was felt by the panel to be unsatisfactory: some students were missing out on exposure to a sufficiently broad range of national and international scientists presenting their work. The panel felt this was an essential part of their training, which needed to be reflected in IFR training policy, with minimum seminar attendance levels set.
17. Some students were clearly benefiting from the multi-disciplinary environment of the NRP. Some student projects were well designed to make use of the facilities and expertise across NRP. For example, some students made use of the tissue bank at the Norfolk and Norwich University Hospital and the NMR facilities at JIC. However, attitudes to seminar attendance raised concerns about the breadth and range of scientific skills training which students were receiving at IFR. The panel felt that together with a more comprehensive programme of training available (see section 11) and a minimum seminar attendance level (see section 16), the new PDP should form the basis of a more robust approach to research training.

PROVISION OF GENERIC NON RESEARCH-BASED TRAINING

Overall Rating: Adequate

18. The recently developed Transitions Programme, which was organised by UEA, provided a mechanism for the delivery of generic and specific research skills training (see section 11). Apart from elements of Transitions I (Year 1) no part of the programme appeared to be mandatory, and the messages here were confused. Students were expected to take two weeks of training in the first year. If students did not attend they were expected to take the training in the second year. At the time of the visit, however, all students had attended the training. Transitions I (Year 1), organised by UEA, covered generic skills that were applicable to all NRP postgraduates (e.g. working in teams; interpersonal skills; time management) and more discipline-specific skills (e.g. statistics; communicating science to the public). Students reported that Transitions I was well organised, and provided an opportunity to meet students at UEA including those studying non-science subjects. However a number of students felt that this training was too general and did not meet their needs as students at IFR. Although the panel accepted that the Transitions programme was still in development, it was concerned that elements of the training in the

first year were not sufficiently structured to meet the specific needs of IFR students.

19. Transitions II (Year 2), provided jointly by IFR and UEA, included a range of training options. It was reported by IFR senior management that students took two or three elements from options, one of which covered further research skills training (see section 11). The options included a UK GRAD School, which was strongly recommended to students by IFR senior management. However, despite a high level of awareness by the students only two had taken or planned to take this option. There was a perception that UK GRAD Schools would repeat elements of early training included in Transitions I, and this was clearly acting as a deterrent. The poor uptake of UK GRAD Schools by 2nd and 3rd year students was of particular concern to the panel. It appeared to reflect confusion amongst the students about course content and the mixed response to the relevance of training provided in the first year. The panel recommended that improved attendance at UK GRAD Schools should be encouraged in the PDP as a contract between the student and IFR (see section 17). The remaining options in Transitions II were felt to be weak. One option, "Experiential Learning", was unclear and seemed to repeat training available elsewhere.
20. Transitions III (Year 3) comprised two days of training, including career development training options. At the time of the visit this part of the programme was still in development as UEA had yet to appoint a tutor. Students had access to the UEA Careers service. Career management also formed part of the PDP review meeting after two years. Although the new Transitions III options were yet to be established, the panel felt IFR should do more, particularly in raising awareness of career options other than the conventional first step of a postdoctoral research position. As presented, the third year of the programme provided only a basic range of options for IFR students.

THE QUALITY OF THE TRAINING ENVIRONMENT

Overall Rating: Good

21. Students understood and appreciated the benefit of working in an institute. In particular they felt that supervisors had sufficient time for them and that there was better access to equipment and facilities than found in most universities. Students at IFR benefited from access to a range of core facilities and expertise, some with other members of NRP. Examples were the NMR at the John Innes Centre and the tissue bank at the Norfolk & Norwich University Hospital.
22. Each student had a designated laboratory and desk space with a networked computer. Examples seen by the panel were of a good standard.
23. Students benefited from an on-site library and access to libraries at JIC and UEA. Students could also obtain journals from the Norfolk & Norwich

University Hospital. The library had an additional five networked computers, available for staff and students.

24. Students had access to a range of support options, relating to work and personal issues, including the Graduate Studies Office at JIC and the student welfare officer at IFR. Whilst most students were aware of these lines of support, there was some confusion about the role of the advisor on the Supervisory Committee. Some regarded the advisor as a potential source of pastoral support and source of arbitration, whilst others felt that the advisor was too closely linked to the main supervisor (see section 13).
25. There was a good student community at IFR with a distinct identity. Students participated in social events organised by the IFR staff social club. Students benefited from IFR's links within the NRP including access to sports and social facilities at UEA. Student representatives sat on the IFR GSC and students were all aware of who the representatives were.

GENERAL COMMENTS

26. Students at IFR formed a distinct population, and benefited from, their location within the Norwich Research Park. Students had access to a wide range of facilities and expertise.
27. The quality of supervision was of a high standard. However, the panel felt that the roles of the individual members of the Supervisory Committee and other support structures needed to be more clearly defined. Monitoring and assessment were comprehensive but the panel felt that the progression to a PhD should be considered in the first year.
28. The panel was concerned that poor attendance at seminars meant that students were not fully benefiting from the multidisciplinary environment in which they were located. Attendance at seminars should be an essential part of student training and measures to ensure a minimum attendance should be put in place.
29. The panel welcomed the introduction of a Personal Development Plan (PDP), and recommended that this be used to form a contract between the student and IFR in determining generic and research skills training. In particular this should be used to ensure that all students were obtaining the maximum benefit from the multidisciplinary environment within IFR and the NRP.

SUMMARY OF RECOMMENDATIONS

Recommendation 1

The panel supported the Institute's intention to increase student numbers. In particular, opportunities to increase the numbers of students funded by industry should be fully explored.

Recommendation 2

The panel recommended that the UEA Training Catalogue should be widened to include lists of research skills training available from all sources that had been used by IFR students.

Recommendation 3

A clear statement was needed about who was responsible for the essential elements of supervision and mentoring within the Supervisory Committee. The panel felt that student decisions about choice of advisors might more sensibly be delayed. Additionally, further clarification was needed of how support and mentoring roles provided elsewhere are distinct from those provided by the Supervisory Committee.

Recommendation 4

Although the panel accepted that there was a high level of monitoring, and that it was possible to bring forward the Transfer Committee in particular cases, it felt that progression to a PhD should be routinely decided within the first year.

Recommendation 5

The apparent lack of importance placed on attendance at seminars, with students missing an opportunity to foster broad interdisciplinary awareness, was felt by the panel to be unsatisfactory: some students were missing out on exposure to a sufficiently broad range of national and international scientists presenting their work. The panel felt this was an essential part of their training, which needed to be reflected in IFR training policy, with minimum seminar attendance levels set.

Recommendation 6

The panel felt that, together with a more comprehensive programme of training available (see Recommendation 2) and a minimum seminar attendance level (see Recommendation 5), the new Personal Development Plan should form the basis of a more robust approach to research training.

Recommendation 7

Although the panel accepted that the Transitions programme was still in development, it was concerned that elements of the training in the first year were not sufficiently structured to meet the specific needs of IFR students. The poor uptake of the UK GRAD Schools by 2nd and 3rd year students was of particular concern to the panel. It appeared to reflect confusion amongst the students about course content and the mixed response to the relevance of training provided in the first year. The panel recommended that improved attendance at UK GRAD Schools should be encouraged in the PDP as a contract between the student and IFR.

Recommendation 8

The panel felt IFR should do more, particularly in raising awareness of career options other than the conventional first step of a postdoctoral research position. As presented, the third year of the Transitions programme provided only a basic range of options for IFR students.

The following documents were tabled at the meeting:

Recruitment and admissions documentation (Advertising documentation including IFR web pages, IFR adverts; Postgraduate Application Form Guidance Notes; Reference Form; Information on Eligibility; UEA Scholarships Funding details; UEA Financial Guarantee Form; UEA Information on English Language Proficiency; Proposal Form for a Postgraduate Studentship at IFR; GSO Research Degree Application Assessment Form; IFR pro-forma student interview invitation letter; IFR Briefing Notes for Short-Listed Candidates; Candidate Recording and Rating Form; Person Specification Form; Pro-forma offer letter; Information on Accommodation in Norwich; IFR Student Registration Policy)

Registration and Induction Documentation (Pro-forma student letter; NRP Postgraduate Student Induction Programme 2004; Document “What to Expect as a Graduate Student at IFR”; GSO document “Where to go for advice?”; IFR Intranet page “Guidance for PhD Students and Supervisors”; Handbook for Students Registered in the Schools of Science at IFR/JIC 2004/5)

Supervisors Documentation (JIC/Sainsbury Lab GSC Guidelines for PhD Supervisors with New Students; UEA web page “Aiming High: Best Practice in Research Supervision”; Details of Supervisors at IFR; IFR Policy on Postgraduate Supervision at IFR)

Training and Personal Development Documentation (UEA Transitions Programme: A Training in Professional Skills for Higher Degree Students; Transitions I: Professional Skills for PGR Students First Year Programme; IFR Skills Questionnaire 2004; IFR Personal Development Plan; UEA Training Catalogue Supplement for Students Registered in the Faculty of Science and NRP; IFR Human Resources Strategy on Training and Career Development)

Progress Monitoring Documentation (GSO letter to supervisors about new students; IFR Guidance Notes for MPhil/PhD Progress Reports; UEA/IFR Graduate Student Progress Report; Graduate Student Progress Reports (Part C. Record of Initial Meeting of Student with Supervisory Committee; Part D. Review of Years 1/2/3/Registration Only by the Student and Part G. Schedule for MPhil to PhD Transfer Assessment); UEA Postgraduate Training Record; Progress letter from NRP GSO)

Thesis Submission Documentation (IFR letter relating to “Registration Only” status; Information on “Research Degrees: Submission, Presentation, Consultation and Borrowing of Theses”; UEA Research Degree Application for Approval of Thesis Title and Examiners form; Details of PhD Regulations from UEA Calendar 2004/5; UEA Research Degree Entry Form)

Concessions Documentation (UEA Application for an Extension to the Period of Time Allowed for the Submission of a Research Degree Thesis)

Graduate Studies Committee Documentation (Details of IFR GSC; Minutes of GSC June 2004)