

# MSC Training Delivery in Birmingham

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**Science** in healthcare



# MSC Career Pathway

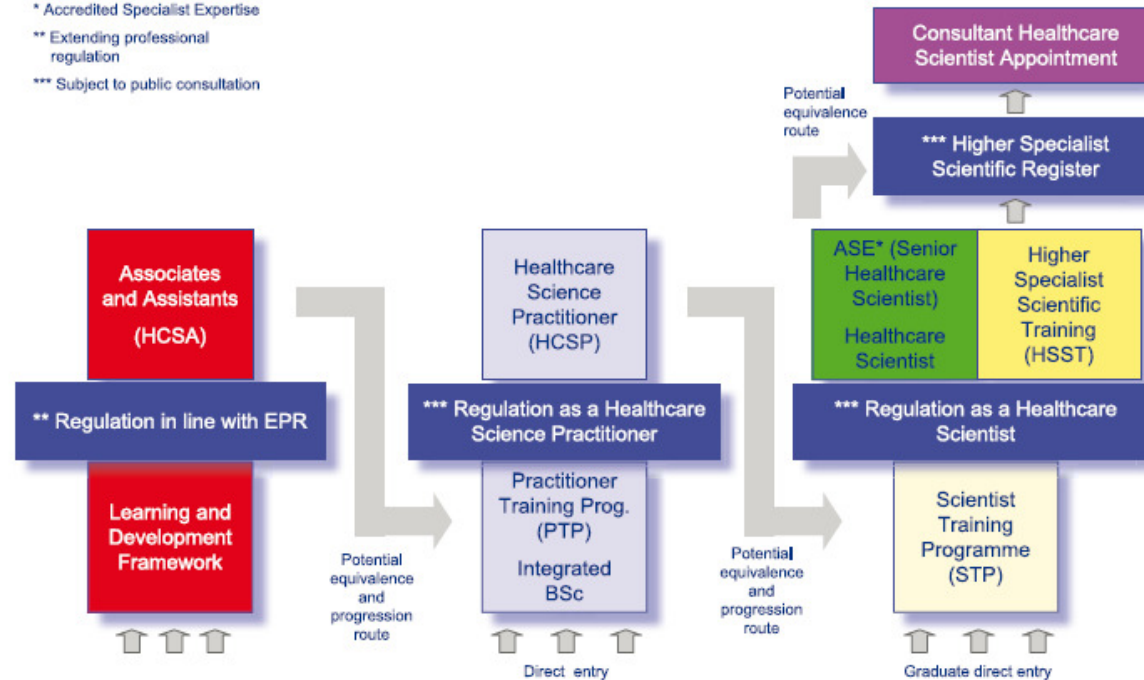
- Healthcare Science Assistant (HCSA)
- Healthcare Science Practitioner (HCSP)
- Healthcare Scientist (HCS)
- Two training programmes:
  - Practitioner Training Programme (PTP)
  - Scientist Training Programme (STP)

*The Future of the Healthcare Science Workforce Modernising  
Scientific Careers: The Next Steps (Gateway ref 10913)*

# The MSC Model

## Modernising Scientific Careers: Career and Training Pathways

- \* Accredited Specialist Expertise
- \*\* Extending professional regulation
- \*\*\* Subject to public consultation



# The MSC Genetic Pilot

- Investment of £4.7m over 4 years
- Aim to design education and training programme for Genetics
- 24 nationally funded posts
- 9 Regional Genetics laboratories
- Work based training
- Development of Masters degree

# Implications for Genetics

- Far reaching
- Genetics as a discipline
  - Rather than 'cytogenetics' or 'molecular genetics'
- Exciting opportunity

# Training Delivery

- Training delivered with Regional Laboratory
- Academic partner – University of Nottingham
- Masters degree (MSc) awarded as part of scientist training programme

# Pilot Sites and Trainee Numbers October 2009

TRUST LOCATION	PTP	STP	SHA
Guy's and St Thomas' NHS Foundation Trust	2	0	London
NE Thames Regional Genetics Service, Great Ormond Street Hospital NHS Trust and Northwick Park NHS Trust	1	2	London
Bristol Genetics Laboratory, Southmead Hospital	1	2	South Central
Liverpool Women's NHS Foundation Trust	2	0	North West

Regional Genetics Lab, Birmingham Women's' NHS Foundation Trust	4 (SHA Funded posts)	6 (4 SHA funded & 2 nationally funded posts)	West Midlands
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The Leeds Teaching Hospitals NHS Trust Diagnostic and Therapeutic Services Division AND Sheffield Laboratories, Sheffield Children's Foundation NHS Trust	1	4	Yorkshire and Humberside
Regional Genetics Lab, Birmingham Women's' NHS Foundation Trust	4 (SHA Funded posts)	6 (4 SHA funded & 2 nationally funded posts)	West Midlands
Nottingham University Hospitals NHS Trust	0	1 (SHA funded)	East Midlands
<b>Total number of trainees</b>	<b>16</b>	<b>17</b>	

# MSC Trainees in Birmingham

## October 2010

- Based on initial experience of Pilot we recruited a further two Healthcare Scientist Trainees in October 2010


*(no additional Practitioner trainees were recruited in Birmingham)*

# Training Delivery -PTP

- Practitioner trainees have completed first module
  - Sample receipt and preparation
- Modules 2 and 3 have been combined
  - Sample analysis and reporting
    - Focus initially on molecular applications
    - Currently completing chromosome applications
- Final 2 months of programme allocated to 'consolidation'

# PTP

## Modules 2 and 3 Timetable

Birmingham Women's   
NHS Foundation Trust

West Midlands Regional Genetics Laboratory  
Healthcare Science Practitioner Training Programme Timetable for Module 2 and 3

Plan

Week	40	41	42	43	44	45	46	47	48	49	50	51	52
Year	2010												
Date	5th Jul	12th Jul	19th Jul	26th Jul	2nd Aug	9th Aug	16th Aug	23rd Aug	30th Aug	6th Sep	13th Sep	20th Sep	27th Sep
A	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis
B	MLPA	MLPA	MLPA	MLPA	MLPA	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Analysis	Seq - Analysis
C	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Seq - Process	Seq - Process
D	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Trp/SB Meth	Trp/SB Meth

Week	1	2	3	4	5	6	7	8	9	10	11	12	13
Year	2010												
Date	4th Oct	11th Oct	18th Oct	25th Oct	1st Nov	8th Nov	15th Nov	22nd Nov	29th Nov	6th Dec	13th Dec	20th Dec	27th Dec
A	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Lab visit - MD	MLPA	MLPA	MLPA	A/L	A/L
B	Seq - Analysis	Seq - Analysis	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Lab visit - MD	Microsatellites	Microsatellites	Microsatellites	A/L	A/L
C	Seq - Process	Seq - Process	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Seq - Analysis	Lab visit - MD	MLPA	MLPA	MLPA	A/L	A/L
D	Trp/SB Meth	Trp/SB Meth	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Seq - Process	Lab visit - MD	Seq - Analysis	Seq - Analysis	Seq - Analysis	A/L	A/L

Week	14	15	16	17	18	19	20	21	22	23	24	25	26
Year	2011												
Date	3rd Jan	10th Jan	17th Jan	24th Jan	31st Jan	7th Feb	14th Feb	21st Feb	28th Feb	7th Mar	14th Mar	21st Mar	28th Mar
A	MLPA	MLPA	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	FISH
B	Microsatellites	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Chromosome analysis
C	MLPA	MLPA	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Microsatellites	Chromosome analysis
D	Seq - Analysis	Seq - Analysis	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	Trp/SB Meth	MLPA	MLPA	MLPA	MLPA	MLPA	MLPA	Chromosome analysis

Week	27	28	29	30	31	32	33	34	35	36	37	38	39
Year	2011												
Date	4th Apr	11th Apr	18th Apr	25th Apr	2nd May	9th May	16th May	23rd May	30th May	6th June	13th June	20th June	27th June
A	Chromosome analysis			A/L	Chromosome analysis								
B	FISH	FISH		A/L	Chromosome analysis								
C	Chromosome analysis			A/L	FISH	FISH	Chromosome analysis						Array
D	Chromosome analysis			A/L	Chromosome analysis			FISH	FISH	Chromosome analysis			Array

Week	40	41	42	43	44	45	46	47	48	49	50	51	52
Year	2011												
Date	4th Jul	11th Jul	18th Jul	25th Jul	1st Aug	8th Aug	15th Aug	22nd Aug	29th Aug	5th Sep	12th Sep	19th Sep	26th Sep
A	Array	Array	Chromosome analysis		Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation
B	Array	Array	Chromosome analysis		Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation
C	Chromosome analysis				Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation
D	Chromosome analysis				Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation

Non-cancer section		A - 10C, 15NC, 2PN
Prenatal section		B - 15C, 2MC, 10NC
Cancer section		C - 10NC, 15NC, 2MC
Molecular Oncology section		D - 2MC, 15NC, 15C
Lab visit - MD	week away at other genetic centres to learn about other methods for mutation detection	
A/L	Suggested Annual leave	
Consolidation	Cross departmental	

# Training Delivery -STP

- First cohort have completed:
  - Genetics of Learning Disorders
  - 2x Pathology rotations
  - Genetics of Infertility and Sexual Differentiation
- Timetables have been prepared to meet learning outcomes
- Competency documentation completed
- Assessments completed

# Progress

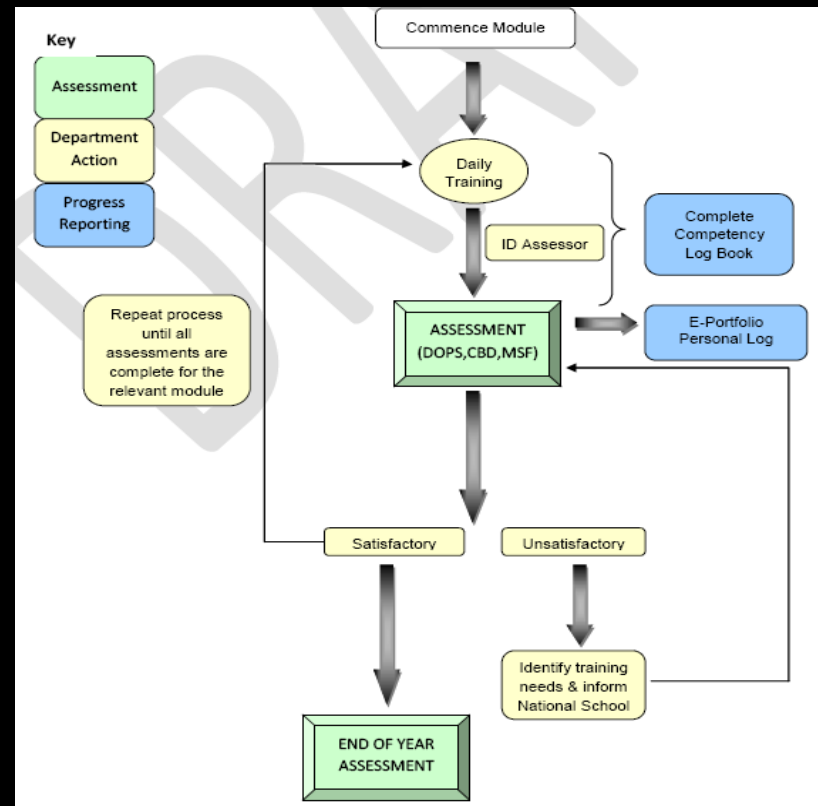
- Training has progressed very well
- Initial genetics module required significant 'tinkering'
  - Trainers getting used to a new system
  - Trainees getting used to the programme
- Better organisation achieved for 2<sup>nd</sup> Genetics module

# Assessment

- On-line assessment software
- Easy to use
- Comprehensive
- Stores data for each individual trainee
  - Records:
    - Competences
    - Assessments (CBD, DOPS, MSF)

# Assessment

- Competence
- Direct Observation of Practical skills **(DOPS)**
- Case Based Discussion **(CBD)**
- Multi-Source Feedback **(MSF)**



# Competency Log

Modernising Scientific Careers  
Trainee Assessment and Competency Programme

W @ S P

Logged in as: Sylvia MSF CbD DOPS Competency Log Documentation Personal Info Log Off

**Scientist Training Programme**

**Genetics of learning disorders** 0 %

Learning Outcome	Progress	%	Complete	Submitted	Started	Outstanding	Total
<a href="#">Relevant range of Genetics testing</a>	<input type="text"/>	0	0	0	0	2	2
<a href="#">Develop an appropriate testing strategy</a>	<input type="text"/>	0	0	0	0	4	4
<a href="#">Chromosome analysis</a>	<input type="text"/>	0	0	0	0	3	3
<a href="#">Microarray analysis</a>	<input type="text"/>	0	0	0	0	2	2
<a href="#">Analysis and interpret fragile X syndrome</a>	<input type="text"/>	0	0	0	0	8	8
<a href="#">Implications of genetic tests</a>	<input type="text"/>	100	0	0	0	0	0

**Infertility and disorders of sexual differentiation** 0 %

**Population Screening** 0 %

**Cancer** 0 %

**Managerial and Leadership skills** 0 %

**Research** 0 %

# CBD/DOPS/MSF

- Case Based Discussion (**CBD**) and Direct Observation of Practical Skills (**DOPS**)
  - Excellent assessment tools
  - Give a real insight into the trainee's development
  - Help measure training delivery
  - Opportunity for trainee to demonstrate what they have learnt
  - Immediate and ongoing feedback for trainee and trainer



Logged in as: Louise Johnston

MSF CbD DOPS Documentation Personal Info Log Off

**Size CGG repeats across FMR-1 gene and classify according to normal, intermediate or expanded ranges**

**Genetics Scientist Training Programme**

Please grade trainee in the following areas:	1 2 3 4 5 6 7						
	Very Poor	Poor	Needs Development	Satisfactory	Good	Very Good	Unable to Comment
1. Understands the clinical context of the procedure including priority setting and testing strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Understands scientific principles of procedure including basic biology underpinning it and an awareness of troubleshooting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Has read, understands and follows the appropriate SOP's, risk and COSHH assessments, and any other relevant H&S documentation including equipment care and maintenance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Understands and applies the appropriate test validation, IOC,EOA relevant professional/ clinical guidelines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Understands and applies associated IT bioinformatics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6. Accurately completes associated documentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Output meets accepted laboratory/professional standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Carries out the procedure within appropriate time frame	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Is aware of the limitations of the test and sensitivity/specificity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Is able to analyse, interpret and report the results of the procedure and provide appropriate clinical advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Demonstrates awareness of the limits of responsibility and when to seek advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
12. Understands the ethical, legal and social implications of the procedure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Consideration of patient professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
14. Overall ability to perform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Feedback and documentation of learning needs:**  
Satisfactory overall, minor problems in interpreting more ambiguous genotypes (two alleles with CGG repeats differing by one repeat unit).

**Agreed Action:**  
Further experience will be gained in genotyping routine fragile X PCR results.

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# Balancing Learning Needs

- Important to balance work based and academic learning
- Trainees allocated ½ day per week to undertake academic work
- University of Nottingham MSc
  - Problem based learning (PBL)
  - Residential (3 days) courses
  - Examination and Essays (facilitated locally)

# Pathology Rotation

- Length
  - Too long
  - Too short
  - Just right
- Reliant on good local contacts
- Curriculum content

# Trainee Experience in Pathology

- Gained an overview of how other laboratories work
- Gained a certain level of competence and were able to contribute in a small but constructive way
- Majority of trainees found it a positive experience

# Trainee Comment

***'My experience was very positive and I feel I gained a good appreciation and general understanding of the discipline. I enjoyed the hands on approach that the rotation took and felt getting involved in doing the work helped me to understand and gain an insight more so than a purely observational approach'***

# Ongoing Considerations

- Important to involve existing staff
- Develop training roles at all levels within the department
- Encourage cross sectional/cross discipline communication
- Build an integrated timetable
  - Cytogenetics
  - Molecular Genetics
  - Pathology
  - University
  - Clinical

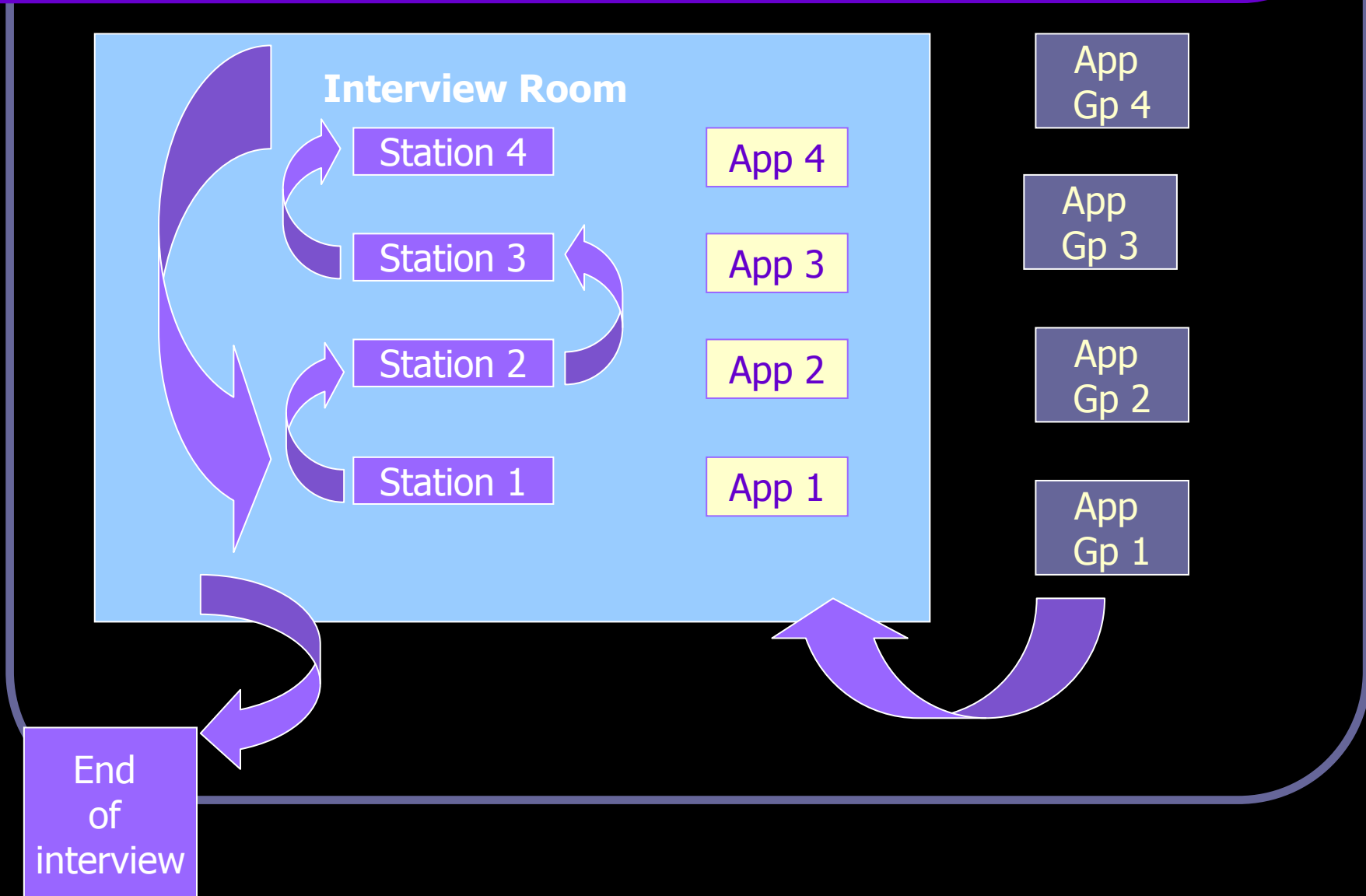
# The Trainees

- The trainees have responded very well
- Recognition that the training is different but built on a firm foundation of previous training experience
- Already noticeable difference in trainee development
- A broader outlook on Healthcare Science but maintaining discipline specific quality and expertise

# 2011 Recruitment

- Five posts have been advertised nationally
- Local short listing/national recruitment
- Friday 15<sup>th</sup> April
- Birmingham City Football Ground

# Interview process



# Summary

- MSC has been challenging to implement but comes with rewards
- Assessment process provides reassurance for training delivery
- Support and Leadership from National School is imperative for success
- Scope for further development and recognition of Healthcare Science workforce

# Acknowledgements

- Paula Page
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  - Kath Sidoli
- Pilot Site Training Leads
- University of Nottingham
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  - Dr Sally Chappell
- Sue Avery
- Susan Sharpe
- Rachel Webster
- Jackie Martin

