



An initiative to facilitate greater understanding of breast cancer biology whilst addressing the 3Rs in animal research

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National Centre
for the Replacement
Refinement & Reduction
of Animals in Research



What is SEARCHBreast and will it help you?



Sharing Experimental Animal Resources: Coordinating Holdings – **Breast**

- **Connect** breast cancer researchers by building a dynamic network
- Encourage **sharing** animal resources, knowledge, and ideas through the network and a dedicated website and database
- Increase the quality of research outputs, **discovering** more about breast cancer biology

Animal use in scientific research



- **Over 4 million animals are used in scientific research each year in the UK alone¹**
- **1/3 of research funded by the MRC, BBSRC and Wellcome Trust involves the use of animals²**
- **Over the past 5 years close to 350 original research articles were published which used animal models of breast cancer in the UK³**

1. UK Home Office data 2011.

2. 'Evaluating Progress in the 3Rs: The NC3Rs Framework'

3. Pub Med Sept 2015

Addressing the 3Rs in Animal Research

There is growing support amongst researchers, government and the general community to consider the Replacement, Refinement and Reduction (3Rs) of animals in research when designing or embarking on new *in vivo* experimentation.

Replacement

Methods which avoid or replace the use of animals

Refinement

Methods which minimise suffering and improve animal welfare

Reduction

Methods which minimise the number of animals used per experiment



National Centre
for the Replacement
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Infrastructure for impact award

How will SEARCHBreast address the 3Rs?

Reduction ● Replacement ● Refinement

Reduction *Methods which minimise the number of animals used per experiment*

New Experiments

Careful consideration of all aspects of intended animal use during the design of the experiment (number, types of material, use for excess material).

Archived Material

In cases where excess material has already been archived, sharing these models to other researchers (hence preventing new models being created), will lead to fewer animals being used.

SEARCHBreast has facilitated this process by bringing these materials to the public domain *via* a dedicated website and database.

<https://searchbreast.org>

Share
Material

Search or deposit models

SEARCHBreast has developed a virtual searchable database of archival material, available on a collaborative basis.

Deposit



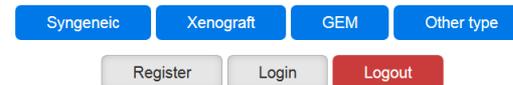
SUBMIT YOUR MODEL TO THE DATABASE



Search



DATABASE SEARCH



SEARCHBreast is for those who already use *in vivo* models and those who wish to do so.

Deposit a Model



SEARCHBreast is a virtual resource, the material stays with the contributor.

Upload syngeneic

Upload xenograft

Upload GEM

Upload other type

Genetically Modified (GEM) Model Submission

Your name:

Email:

Institute:

Model name: Please specify if 'Other' selected

Jax stock number:

Description:

GEMM allele:

Common name/s:

Strain: Please specify if 'Other' selected

Sex of animals:

Phenotypes:

Develops mammary tumours: Preneoplastic lesions:

ER:

PR:

HER2:

Origin:

CK5:

CK8:

p63:

SMA:

CK Other:

Develops metastasis:

Bone: Penetrance:

Submit

Reset

Edit your profile or models

SEARCHBreast logged in:

Upload syngeneic

Upload xenograft

Upload GEM

Upload other type

Search database

Edit your info

Logout

EDIT

Registration Details

Email: searchbreast@leeds.ac.uk

Your name:

Institute:

Password:

It's OK for SEARCHBreast to contact me.

Keep me up to date about SEARCHBreast events.

Submit

Reset

Your Models

Name	Model Type	Model Name	Description	Select this model
SB_0049	Syngeneic	Example 1	-	<input type="radio"/>
SB_0050	Xenograft	-	-	<input type="radio"/>
SB_0051	GEMM	K14-Cre:Brca1 ^{f/f} :p53 ^{+/-}	K14-Cre recombinase mediated deletion of the Brca1 ^{f/f} (exons 22-24) on a background of p53 heterozygous loss leads to mammary tumours of the adenoacarcinoma (metaplastic) carcinoma or malignant adenomyoepithelioma subtype.	<input type="radio"/>

Edit

Delete

Search a Model



You don't have to contribute models to request them

Search database

Quick Search: ER Positive

Go

All model types

Syngeneic

Xenograft

GEM

Other type

XENOGRAFT MODEL SUBMISSION

Your name: SEARCHBreast

Email:

Institute: University of Leeds

Model name:

Strain: Other

Sex of animals: Female

Tumour/transplant site:

Mammary fat pad

Cell line used: MDA-MB-436

Material available:

Tumour	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Mammary fat pad (tumour)	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Mammary fat pad (normal)	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Lung	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Lymph node	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Heart	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Spleen	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Liver	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Long bones	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Skull	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Vertebrae	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Serum	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Circulating DNA	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Other	<input type="checkbox"/>	Storage: Frozen <input type="checkbox"/> FFPE <input type="checkbox"/> Other (DNA, RNA, protein) <input type="checkbox"/>
Any	<input checked="" type="checkbox"/>	

Analyses performed:

Tumour volume	<input type="checkbox"/>	General histology	<input type="checkbox"/>	Vascularisation
Immune infiltrate	<input type="checkbox"/>	Apoptosis	<input type="checkbox"/>	Proliferation
Gene expression studies	<input type="checkbox"/>	Other	<input type="checkbox"/>	Any

Submit

Reset

All entries

Search a Model



Summary of search results

#	SEARCHBreast ID	Model Type	Strain	Site	Cell Line	Model Name
1	SB_0001 (version 2)	Xenograft	BALB/c-Nude	Intracardiac	-	MDA-MB-231 Bone Metastasis Model
2	SB_0025 (version 1)	Xenograft	MF1 nude	Subcutaneous - flank	MDA-MB-436	-
3	SB_0026 (version 1)	Xenograft	CD1-Nude	Subcutaneous - flank	MDA-MB-436	-
4	SB_0027 (version 1)	Xenograft	CD1-Nude	Intra-tibial	MDA-MB-436	-

More details about a chosen model

SEARCHBreast Model ID	SB_0027 (version 1)					
Model Submission Date	2015-01-13					
Model Type	Xenograft					
Model Name	-					
Strain	CD1-Nude					
Sex	Female					
Site	Intra-tibial					
Cell Line	MDA-MB-436					
Material Available	Tumour					
Material Storage	<table border="1"> <tbody> <tr> <td>Tumour</td> <td>FFPE</td> </tr> <tr> <td>Long bones</td> <td>FFPE</td> </tr> </tbody> </table>		Tumour	FFPE	Long bones	FFPE
Tumour	FFPE					
Long bones	FFPE					
Therapy Available	Yes					
Therapy	Control (0.1mls PBS), 100ug/kg zoledronic acid, 2mg/kg doxorubicin or 100ug/kg zoledronic acid followed 24h later by 2mg/kg doxorubicin. All treatments were given once per week for 6 weeks					
Analyses	Tumour volume; General histology; Vascularisation; Apoptosis; Proliferation; Gene expression;					

Current Models Available:

- **13 xenograft 12 GEM**
- **Live mice**
- **Whole mammary gland**
- **Long bones**

Connect



Make connections

- Members can request more information about models of interest by sending **SEARCHBreast** an email.
- **SEARCHBreast** will then alert the owner of the material of the request who will then contact the contributor.
- **SEARCHBreast** to be acknowledged for any collaborations formed in any future publications.

Can't find a model?

We are here to help!



help@searchbreast.org

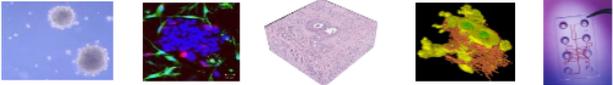
Replacement *Methods which avoid or replace the use of animals*

SEARCHBreast is also committed to promoting the use of humanised breast tissue models as replacement alternatives to animal experiments.



Workshop 2: 3D modelling of breast cancer

Join us to discover cutting edge *in vitro* technologies that could help accelerate your breast cancer research without animals!



10am - 4.30pm
Thursday 21 May 2015

Queen Mary University of London
Charterhouse Square
EC1M 6BQ London

A collaboration across 4 institutions



With funding from



- Sources of where to obtain human tissue
- Practical advice and guidance for handling human tissue
- Cutting edge applications on what can be achieved using human tissue or a combination of human and animal tissue

Overcoming many of the perceived barriers in working with human tissue

Proceedings to be published and linked onto the website

SEARCHBreast – next steps



Refinement *Methods which minimise suffering and improve animal welfare*

SEARCHBreast is developing a resources section which will have links to:

- Refinement resources for example NC3Rs ARRIVE guideline
- Funding opportunities for incorporating the 3Rs in your research

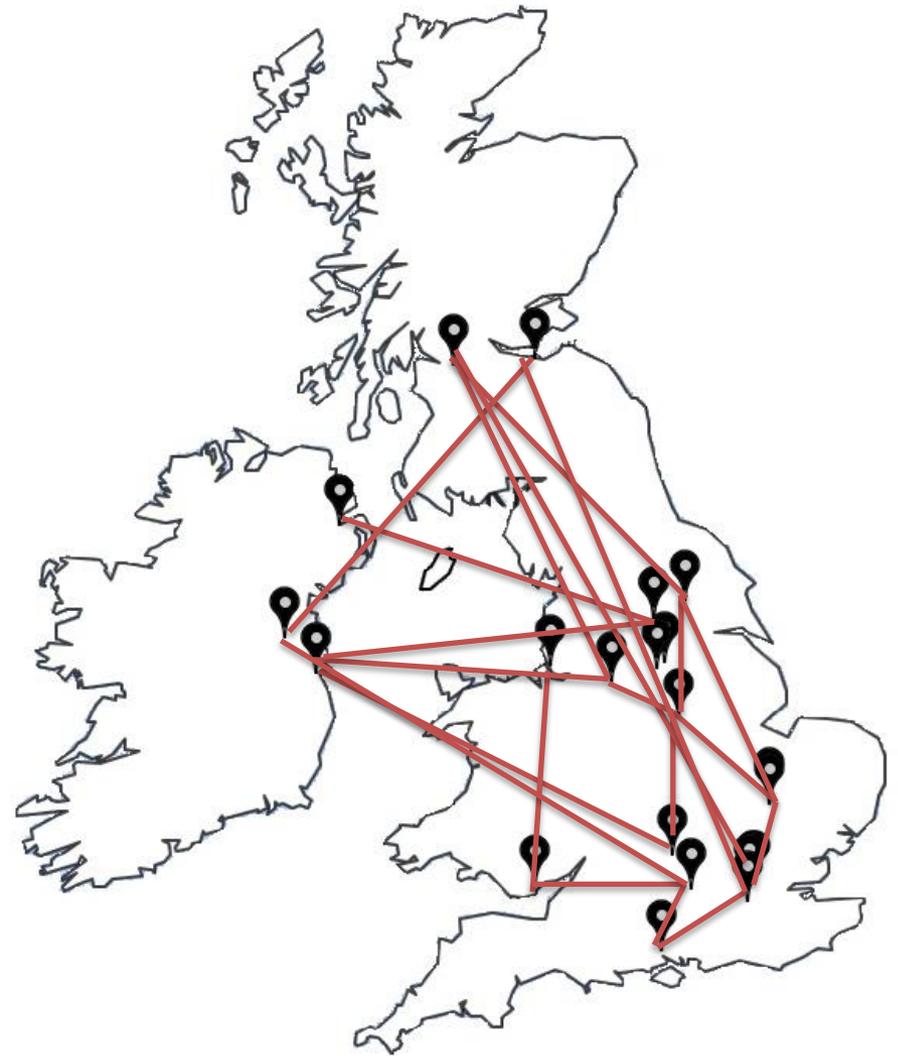
Bioanalysis mining of Mouse/Human/Cell lines of Breast Cancer

- The aim will be to align the human/cell line/mouse microarray breast cancer data and see how similar or distinct they may be.
- This will enable a comparison of the three data sets available under the ‘one roof’.
- This will be done in conjunction with the BCNTBbp.

SEARCHBreast is connecting breast cancer researchers



- 75 members in a growing network
- Providing opportunities for new collaborations
- SEARCHBreast members get invited to events, workshops, and more!



SEARCHBreast membership



There are many benefits in becoming a SEARCHBreast member.

These include:

Collaboration opportunities

- **Joining an active dynamic network of breast cancer researchers**
- **Invitations to attend SEARCHBreast events**

Increasing the depth of your research

- **Publish in higher ranking journals**
- **Circumvent animal licenses**

Future grant applications

- **Demonstrable evidence of due diligence of currently available models before creating new models**
- **A letter confirming support of the initiative, outlining evidence of dissemination of knowledge**

Join SEARCHBreast today!



Connect

Register for SEARCHBreast - it's free

- Join our network of breast cancer researchers to unlock all of the benefits of SEARCHBreast: access to the database, events, and resources



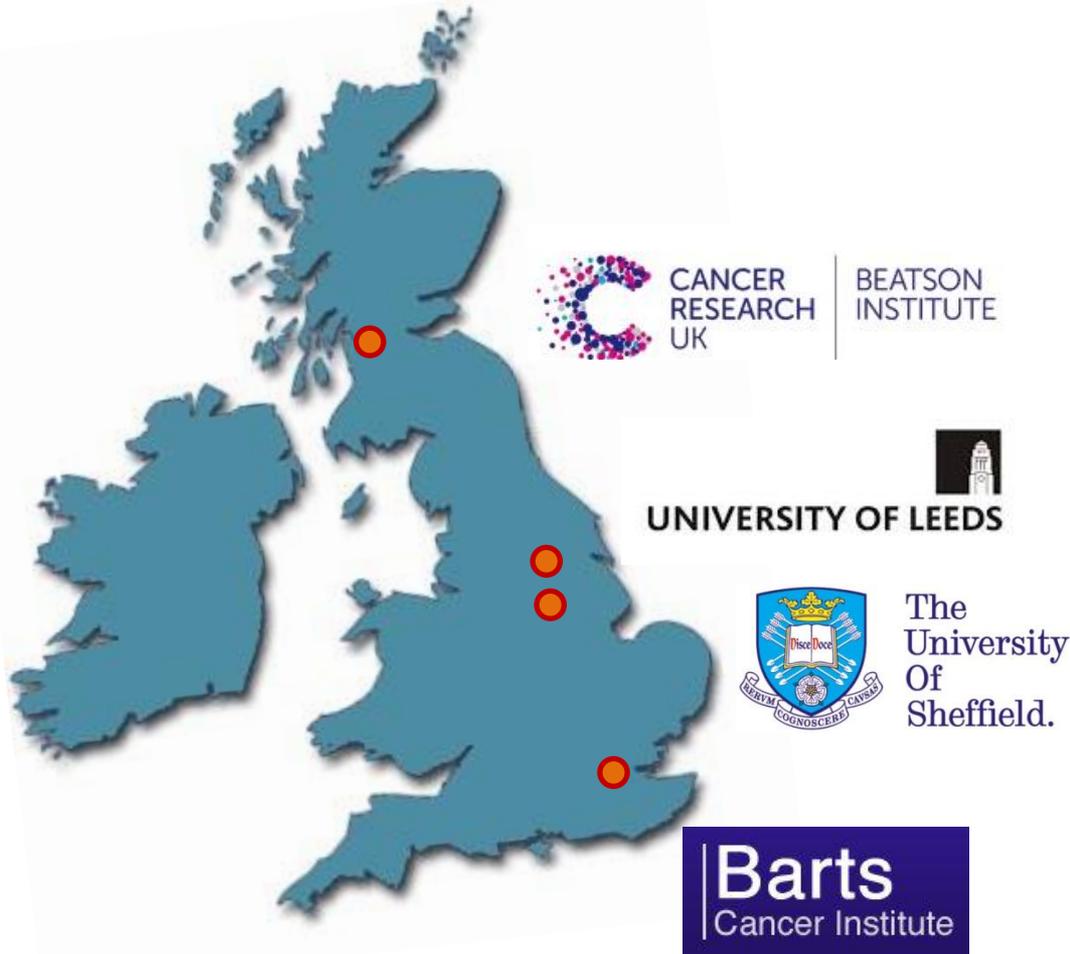
- Go to <https://searchbreast.org> then follow the prompts to 'Get Started'
- All you need is a UK academic email address to register



- **SEARCHBreast** is connecting breast cancer researchers with expertise spanning *in vivo*, *in vitro* and *in silico* models of breast cancer.
- This multilateral approach will enable a greater understanding of breast cancer biology.

Acknowledgements

SEARCHBreast is a collaboration: Five grant holders across four research institutes across the UK



- **Professor Valerie Speirs**
- **Dr Karen Blyth**
- **Professor Ingunn Holen**
- **Dr Claude Chelala**
- **Professor Louise Jones**

Dr Phil Carter

