



**IPAD-MD Expert Group Meeting on Standards & Technology
Deliverable 6.2 (WP6)**

**IMPC-INFRAFRONTIER Strasbourg Meeting: Investigating mouse models for
biomedical research**

INFRAFRONTIER IPAD-MD Sponsored Genome Editing Workshop

20-22 April 2016, Strasbourg France

(May 2016)

CONTENT

1. Summary	3
2. Agenda	4-6
3. Participants list	7-11
4. Introduction & objectives	12
5. Major outcomes	12-14
6. Action points	15

1. Executive Summary

- The IMPC-INFRAFRONTIER Strasbourg Meeting was jointly organized by PHENOMIN-ICS and the IMPC.
- INFRAFRONTIER IPAD-MD project contributed by sponsoring a Workshop on 'Genome Editing' and a Workshop on 'Phenotyping', which together constitute the Expert Group meeting on Standards & Technology II.
- The workshop on 'Genome Editing' technologies tackled the advances on genome editing technologies and its current status on the CRISPR technology application at the IMPC production centers. This was followed by a round table discussion on 'Definition of a minimal set of information for archiving CRISPR alleles'
- The Phenotyping Workshop consisted of a series of updates from the IMPC Center (PHENOMIN-ICS, HMGU, JAX and KMPC) on the progress achieved since the IMPC Korea meeting (September 2015, Expert Group meeting on Standards & Technology -I)
- Around 200 participants attended the meeting including IMPC and INFRAFRONTIER partners as well as French scientific community, mainly of the areas of Intellectual Disabilities and emerging areas such as Microbiota and other emerging technologies of broad interest to the audience
- The IMPC INFRAFRONTIER Strasbourg meeting included ample updates on the current phenotyping developments achieved by the end of Phase I as well as new insights to future and emerging areas and technologies which are of interest for both the IMPC and INFRAFRONTIER. Specifically the discussions 'on the minimal set of information to archiving CRISPR alleles' is a valuable input that will be used for the IPAD-MD Stakeholder meeting I – Industry & Innovation Workshop

2. Agenda

APRIL 20, 2016 WEDNESDAY

- 11:00-12:00 Visit of the Mouse Clinical Institute facility
- 12:00-13:30 Lunch
- 13:30-17:40 IMPC Activities & Progress
- 13:30-15:40 **Session 1 - Adult and Embryo, future challenges, community outreach and IMPC Database - Chair: Colin Fletcher**
- 13:30-14:00 Steve Brown: State of the enterprise
- 14:00-14:20 Steve Murray: Embryo Pipeline
- 14:20-14:40 Mark Moore: Future Challenges
- 14:40-14:55 Terry Meehan: Community Outreach & IMPC Database
- 14:55-15:40 MPI2 Analysis outcome (up to 3 presentations to be selected from the ongoing work)
- 15:40-16:10 Coffee & Tea Break
- 16:10-17:40 **Session 2 - INFRAFRONTIER: IPAD-MD sponsored Genome Editing workshop - Chair: Yann Herval**
- 16:10-16:25 Lauryl Nutter: the IMPC experience on large scale CrispR/Cas9
- 16:25-16:40 Marie-Christine Birling: CrispR-Chromosome Engineering
- 16:40-16:55 Xiang Gao: MARC"s experience on CrispR
- 16:55-17:10 Jason Heaney: CrispR experience@BCM
- 17:10-17:40 Round table on the definition of the minimal set of Informations for CrispR Allele
- 17:40-17:55 Break
- 17:55-18:40 Lecture - Pierre Chambon: Shifting eating creates a misalignment of peripheral and central circadian clocks, and leads to a metabolic syndrome
- 18:50 back to the hotel
- 20:30 Social Event and Cocktail

APRIL 21 THURSDAY

- 08:40-10:20 Session 3 - Rare diseases - Chair: Yann Herval**
- 08:40-09:10 Hélène Puccio: Friedreich Ataxia Mouse Models - promising advances
- 09:10-09:30 Binnaz Yalcin: Neuromorphological Phenotyping of IMPC lines
- 09:30-10:00 Jocelyn Laporte: Mouse models of myopathy
- 10:00-10:20 Alain Chedotal: Large scale 3D screening of axon-guidance disorders in mutant mice

- 10:20-10:50 Coffee & Tea Break
- 10:50-12:30 Session 4 - ID mouse models - Chair: Shigeharu Wakana
 10:50-11:20 Hans Vanbokhoven: Intellectual disabilities and mouse models
 11:20-11:40 Damian Smedley: Rare disease models at the IMPC
 11:40-12:10 Jamel Chelly: Neurodevelopmental disorders
 12:10-12:30 Lionel Reveret: Motion analysis in rodents
- 14:00-16:10 Session 5 - Other Areas and future topics in phenotyping -
 Chair: Steve Brown**
- 14:00-14:20 Jan Rozman: Metabolism paper
 14:20-14:40 Arthur Beaudet: Metabolomic @BCM
 14:40-15:00 Natasha Karp: Sexual dimorphism
 15:00-15:20 Bernard Malissen: Immunophenotyping
 15:20-15:40 Xavier Montagutelli: IMPC-CC
- 15:40-16:10 Coffee & Tea Break
- 16:10-17:40 **Session 6 - Microbiote - Chair: Bernard Malissen**
 16:10-16:40 *Bertrand Routy: Immunotherapy (Cancelled)*
 16:40-17:10 Olivier Bouchez : Methods to characterize the microbiota in the mouse tissues
 17:10-17:40 Andrew MacPherson: Germ free and gnotobiotic mice in the study of host microbial mutation
 18:00 back to the hotel
- 18:00-19:00 IMPC Steering committee by invitation
- 20:00 Gala Diner

APRIL 22 FRIDAY

- 09:00-14:00 IPAD-MD Phenotyping workshop PHENOMIN-ICS, JAX, HMGU, KMPC
- 09:00-10:30 **Session 7 - Ageing pipelines - Chair: Mark Moore**
 09:00-09:15 Tanja Fiegel: Overview of the DCC of the different ageing pipeline
 09:15-09:30 Sara Wells: Assessing post-natal lethality and welfare issue during the ageing pipeline
 09:30-10:00 Round table discussion with representation of different centres
 10:00-10:30 Synthesis
- 10:30-11:00 Coffee & Tea Break

- 11:00-12:00 **Session 8 - Breakout sessions - Chair: Karen Svenson, Steve Murray**
- 11:00-11:10 Breakout 1: Confronting High Fat Challenges (Karen Svenson)
11:10-11:20 Breakout2: Embryo phenotyping pipeline (Steve Murray)
- 11:40-11:50 Wrap-up of the breakout sessions
- 12:30-14:00 [Sandwich Lunch](#)
- 14:00-15:00 Visit of the Mouse Clinical Institute facility

3. List of Participants

Abbas	Zainab	Zainab Abbas	France	zabbas@mail.ccsf.edu
Aguilar-Pimentel	Antonio	HMGU-GMC	Germany	aguilar@Helmholtz-Muenchen.de
ALI-HADJI	Dalila	PHENOMIN-ICS	France	dah@igbmc.fr
Amarie	Oana Veronica	German Mouse Clinic, Munich	Germany	oana-veronica.amarie@helmholtz-muenchen.de
ANDRE	Philippe	PHENOMIN-ICS	France	phandre@igbmc.fr
Antunes	Luis	USB- CITAB/UTAD	Portugal	lantunes@utad.pt
Auburtin	Auriélie	PHENOMIN-ICS	France	auburtin@igbmc.fr
Ayabe	Shinya	RIKEN BioResource Center	Japan	ayabe@brc.riken.jp
AYADI	Abdel	PHENOMIN-ICS	France	ayadi@igbmc.fr
Beaudet	Arthur	Art Beaudet	USA	abeaudet@bcm.edu
BECKER	Julien	PHENOMIN-ICS	France	becker@igbmc.fr
*Becker	Lore	HMGU	Germany	lore.becker@helmholtz-muenchen.de
Bedu	elodie	PHENOMIN	France	bedu@igbmc.fr
Benso	Frank	Charles River	USA	frank.benso@crl.com
Birling	Marie-Christine	PHENOMIN-ICS	France	birlingm@igbmc.fr
BOK	JINWOONG	Korea Mouse Sensory Phenotyping Center	South Korea	BOKJ@yuhs.ac
BOSCH	FATIMA	Universitat Autònoma De Barcelona	SPAIN	Fatima.Bosch@uab.es
BOUABOUT	Ghina	PHENOMIN-ICS	France	bouabout@igbmc.fr
BOUCHEZ	Olivier	GeT-PlaGe	France	olivier.bouchez@toulouse.inra.fr
BOUJARD	Daniel	INSB	France	daniel.boujard@cnrs-dir.fr
Bower	Lynette	Mouse Biology Program, UC Davis	USA	lrbower@ucdavis.edu
Braun	Robert	The Jackson Laboratory	USA	bob.braun@jax.org
Brommage	Robert	Robert Brommage	Germany	robert.brommage@helmholtz-muenchen.de
Brown	Steve	Medical Research Council	UK	s.brown@har.mrc.ac.uk
Brown	James	MRC Harwell	UK	james.brown@har.mrc.ac.uk
Burgio	Gaetan	The Australian National University	Australia	gaetan.burgio@anu.edu.au
Cater	Heather	MRC Harwell	UK	h.cater@har.mrc.ac.uk
CHAMBON	Pierre	IGBMC	France	chambon@igbmc.fr
Champy	Marie-France	PHENOMIN-ICS	France	champy@igbmc.fr
Charles	Capdeville	IGBMC, Metzger's team	France	capdevic@igbmc.fr
Chartoire	Nathalie	PHENOMIN-ICS	France	chartoir@igbmc.fr
CHEDOTAL	Alain	Institut de la Vision	France	alain.chedotal@inserm.fr
Chen	Chao-Kung	EMBL-EBI	UK	ckchen@ebi.ac.uk

Cho	SooYoung	Soo Young Cho	Korea	sooycho@snu.ac.kr
Choi	Jae-Hoon	Hanyang University	Republic of Korea	jchoi75@hanyang.ac.kr
Choi	cheol soo	Choi Cheol Soo	South Korea	cschoi@gachon.ac.kr
Clary	Dave	University of California, Davis	USA	daclary@ucdavis.edu
Codner	Gemma	Mary Lyon Centre	UK	g.codner@har.mrc.ac.uk
CONTE	NATHALIE	EMBL-EBI	UK	nconte@ebi.ac.uk
*de Castro	Ana	INFRAFRONTIER GmbH	Germany	ana.decastro@helmholtz-muenchen.de
Denegre	James	The Jackson Laboratory	USA	james.denegre@jax.org
Dickinson	Mary	Baylor College of Medicine	USA	mdickins@bcm.edu
Dollé	Pascal	IGBMC	France	dolle@igbmc.fr
Du	Qiuyun	Nanjing University	China	duqy@nicemice.cn
EL BIZRI	Rana	IGBMC	France	elbizri@igbmc.fr
El Fertak	Lahcen	PHENOMIN-ICS	France	elfert@igbmc.fr
ELIAS	IVET	Universitat Autònoma De Barcelona	SPAIN	ivet.elias@uab.cat
Elise	Grelet	IGBMC, metzger's team	France	grelete@igbmc.fr
Epp	Trevor	Czech Centre for Phenogenomics	Czech Republic	trevor.epp@img.cas.cz
Erbs	Valerie	PHENOMIN-ICS	France	verbs@igbmc.fr
Felder-Schmittbuhl	Marie-Paule	INCI CNRS UPR3212	France	felderm@inci-cnrs.unistra.fr
Fiegel	Tanja	IMPC Data Coordination Centre (DCC)	UK	t.fiegel@har.mrc.ac.uk
FIORE	frederic	PHENOMIN-CIPHE	France	frederic.fiore@inserm.fr
Fischer	Evelyne	Division cellulaire et neurogenèse	France	evelyne.fischer@inserm.fr
*Flenniken	Ann	The Centre for Phenogenomics	Canada	flenniken@lunenfeld.ca
Fletcher	Colin	NIH	USA	Fletcher2@mail.nih.gov
Franckhauser	Sylvie	Universitat Autònoma De Barcelona	SPAIN	Sylvie.Franckhauser@uab.cat
Frémond	Cécile	PHENOMIN-Taam	France	fremond@cnrs-orleans.fr
Fuchs	Helmut	Helmholtz Zentrum München	Germany	hfuchs@helmholtz-muenchen.de
Gailus-Durner	Valérie	German Mouse Clinic, Munich	Germany	gailus@helmholtz-muenchen.de
Gale	Nicholas	Regeneron Pharmaceuticals, Inc	USA	nicholas.gale@regeneron.com
Gallegos	Juan	Juan Gallegos	USA	Juan.Gallegos@bcm.edu
Gambadoro	Alessia	CNR (Monterotondo - Rome)	Italy	alessia.gambadoro@cnr.it
Gao	Xiang	Nanjing University	China	gaoxiang@nju.edu.cn
GEOFFROY	Andréa	IGBMC	France	geoffroa@igbmc.fr
GHYSELINCK	Norbert B.	IGBMC	France	norbert@igbmc.fr
Goncalves	Isabelle	PHENOMIN-ICS	France	goncalve@igbmc.fr

Greenaway	Simon	MRC Harwell	UK	s.greenaway@har.mrc.ac.uk
Grobler	Anne	PCDDP South Africa	South Africa	anne.grobler@nwu.ac.za
Guo	Shiyong	Nanjing University	China	guosy@nbri-nju.com
HAUSHALTER	Carole	IGBMC	France	haushalt@igbmc.fr
Heaney	Jason	Baylor College of Medicine	USA	heaney@bcm.edu
Henkelman	Mark	Mouse Imaging Centre	Canada	mhenkel@mouseimaging.ca
HERAULT	Yann	PHENOMIN	France	herault@igbmc.fr
Hölter-Koch	Sabine	Helmholtz Zentrum München	Germany	hoelter@helmholtz-muenchen.de
Horner	Neil	MRC Harwell	UK	n.horner@har.mrc.ac.uk
Hough	Tertius	MRC Harwell	UK	t.hough@har.mrc.ac.uk
Hsu	Chih-Wei	Baylor College of Medicine	USA	loganh@bcm.edu
Huang	Chun-fang	NLAC, NARLabs	Taiwan	huangc@nlac.narl.org.tw
Hunter	Jane	The Centre for Phenogenomics	Canada	Jane.Hunter@phenogenomics.ca
JACOBS	Hugues	PHENOMIN-iCS	France	hugues@igbmc.fr
Jacquot	Sylvie	PHENOMIN-iCS	France	jacquot@igbmc.fr
Jerabkova	Katerina	IGBMC	France	jerabkok@igbmc.fr
Jesus	Ruberte	Mouse Imaging Platform	Spain	jesus.ruberte@uab.es
Karp	Natasha	WTSI	UK	nk3@sanger.ac.uk
Kenyon	Janet	MRC Harwell	UK	j.kenyon@har.mrc.ac.uk
KIM	HONGKYUNG	Korea Mouse Sensory Phenotyping Center	South Korea	thbioman@yuhs.ac
KO	HYUK WAN	Korea Mouse Sensory Phenotyping Center	South Korea	kohw@dongguk.edu
Kubik-Zahorodna	Agnieszka	Czech Centre for Phenogenomics	Czech Republic	akubikza@img.cas.cz
Kumar	Vivek	The Jackson Laboratory	USA	vivek.kumar@jax.org
LAPORTE	Jocelyn	IGBMC	France	jocelyn@igbmc.fr
Laurence	Schaeffer	PHENOMIN-iCS	France	schaeffe@igbmc.fr
Laverny	Gilles	Daniel Metzger	France	laverny@igbmc.fr
Lee	Ho-Young	Ho-Young Lee	Republic of Korea	debobkr@gmail.com
Lee	Ho	National Cancer Center	South Korea	ho25lee@ncc.re.kr
Lee	Young Jae	Young Jae Lee	South Korea	leeyj@gachon.ac.kr
Lengger	Christoph	Helmholtz Zentrum München	Germany	lengger@helmholtz-muenchen.de
LEROY	AURELIE	SANOFI	France	aurelie.leroy@sanofi.com
Leuchtenberger	Stefanie	Helmholtz-Zentrum München	Germany	leuchtenberger@helmholtz-muenchen.de
Lindner	Loic	PHENOMIN-iCS	France	loic@igbmc.fr
Liu	Don	Don Liu	USA	liu_don@hotmail.com
Lloyd	Kent	UC Davis	USA	kclloyd@ucdavis.edu
LUCHE	Hervé	PHENOMIN-CIPHE	France	herve.luche@inserm.fr
LUTZ	Yves	IGBMC	France	lutz@igbmc.fr

MACPHERSON	Andrew	University Hospital Inselspital	Switzerland	andrew.macpherson@dkf .unibe.ch
MACQUIN	Cécile	INSERM UMR_S1109	France	macquin@unistra.fr
Malissen	Bernard	CIPHE-PHENOMIN	France	bernardm@ciml.univ- mrs.fr
Malissen	Marie	PHENOMIN-CIPHE	France	marie.malissen@inserm.f r
Mallon	Ann-Marie	MRC Harwell	UK	a.mallon@har.mrc.ac.uk
MALPICA	Carlos	METABOLON INC.	SPAIN	carlos.malpica@mlpvision .com
Mandillo	Silvia	Behavioral Neuroscience Lab	Italy	silvia.mandillo@cnr.it
Marcotte	Eric	Canadian Institutes of Health Research	Canada	eric.marcotte@cihr- irsc.gc.ca
MARECHAL	Damien	Phenomin-iCS	France	marechal@igbmc.fr
Marschall	Susan	EMMA Helmholtz Zentrum München	Germany	s.marschall@helmholtz- muenchen.de
Martin Arenas	Francisco	Universidad de Sevilla	SPAIN	fjmartin@us.es
Masis-Vargas	Anayanci	INCI	France	masisvargas@inci- cnrs.unistra.fr
MASON	JEREMY	EMBL-EBI	UK	jmason@ebi.ac.uk
Masuya	Hiroshi	RIKEN BioResource Center	Japan	hmasuya@brc.riken.jp
McFarland	Michael	The Jackson Laboratory	USA	michaelm@jax.org
MEEHAN	TERRENCE	EMBL-EBI	UK	tmeehan@ebi.ac.uk
METZGER	Daniel	IGBMC	France	metzger@igbmc.fr
MEZIANE	Hamid	PHENOMIN-iCS	France	meziane@igbmc.fr
MIANNE	joffrey	MRC Harwell	UK	j.mianne@har.mrc.ac.uk
Mirochnitchenko	Oleg	ORIP	USA	oleg.mirochnitchenko@ni h.gov
MONTAGUTELLI	Xavier	Institut Pasteur	France	xavier.montagutelli@past eur.fr
Moore	Mark	IMPC	USA	mmoore81@outlook.com
MORKMUED	Supawich	Supawich	France	morkmued@igbmc.fr
Mudgett	John	eIVP	USA	john_mudgett@merck.co m
MUKHERJI	ATISH	IGBMC	France	atish@igbmc.fr
Murray	Stephen	The Jackson Laboratory	USA	steve.murray@jax.org
NAM	KI TAEK	Korea Mouse Sensory Phenotyping Center	South Korea	KITAEK@yuhs.ac
Natukunda	Helen	Medical Research Council	UK	h.natukunda@har.mrc.ac. uk
Neff	Frauke	GMC	Germany	frauke.neff@helmholtz- muenchen.de
Neto	Goncalo	IGBMC	France	gcvneto@igbmc.fr
Newbigging	Susan	The Centre for Phenogenomics	Canada	newbigging@lunenfeld.ca
NGUYEN	Thu Lan	NGUYEN TL	France	nguyent@igbmc.fr
*Nutter	Lauryl	The Centre for Phenogenomics	Canada	lauryl.nutter@sickkids.ca

PARKINSON	HELEN	EMBL-EBI	UK	parkinson@ebi.ac.uk
Parlog	Alexandru	PHENOMIN-ICS	France	parlog@igbmc.fr
Pavlovic	Guillaume	PHENOMIN-ICS	France	pavlovic@igbmc.fr
PENSAVALLE	Joëlle	PHENOMIN-ICS	France	pensaval@igbmc.fr
PERTUY	Fabien	PHENOMIN-ICS	France	pertuy@igbmc.fr
Petit-Demoulière	Benoit	PHENOMIN-ICS	France	petitd@igbmc.fr
Piavaux	Benoit	Czech Centre for phenogenomics	Czech Republic	piavaux@img.cas.cz
POUILLY	Laurent	PHENOMIN-ICS	France	lpouilly@igbmc.fr
Prochazka	Jan	Czech Center for Phenogenomics	Czech republic	jan.prochazka@img.cas.cz
PUCCIO	Hélène	IGBMC	France	puccio@igbmc.fr
PUJOL	ANNA	Universitat Autònoma De Barcelona	SPAIN	Anna.Pujol@uab.cat
RASPA	Marcello	Consiglio Nazionale delle Ricerche	Italy	marcello.raspa@cnr.it
Rathkolb	Birgit	HMGU, German Mouse Clinic	Germany	birgit.rathkolb@helmholtz-muenchen.de
Reilly	Patrick	PHENOMIN-ICS	France	reillyp@gmail.com
RELAC	MIKE	EMBL-EBI	UK	mrelac@ebi.ac.uk
RERRA	ANNA-ISAVELLA	IGBMC	France	rerraa@igbmc.fr
REVERET	Lionel	INRIA	France	lionel.reveret@inria.fr
Reynolds	Corey	Baylor College of Medicine	USA	clreynol@bcm.edu
RHINN	Muriel	IGBMC	France	rhinn@igbmc.fr
Ring	Natalie	IMPC Data Coordination Centre (DCC)	UK	n.ring@har.mrc.ac.uk
Rousseau	Valérie	PHENOMIN-ICS	France	zeitler@igbmc.fr
ROUX	Michel	IGBMC / ICS	France	mjrroux@igbmc.fr
Rowland	Douglas	Center for Molecular and Genomic Imaging	USA	djrowland@ucdavis.edu
*ROZMAN	Jan	HMGU	Germany	jan.rozman@helmholtz-muenchen.de
SCHMITT	Philippe	CELPEDIA	France	schmittp@igbmc.fr
Schuster	Bjoern	Czech Centre for Phenogenomic	Czech Republic	bjoern.schuster@img.cas.cz
Seavitt	John	Baylor College of Medicine	USA	seavitt@bcm.edu
Sedlacek	Radislav	Czech Centre for Phenogenomics	Czech republic	radislav.sedlacek@img.cas.cz
SEISENBERGER	Claudia	IDG	Germany	seisenberger@helmholtz-muenchen.de
SELLOUM	MOHAMMED	PHENOMIN-ICS	France	selloum@igbmc.fr
SEO	KYOUNG YUL	Korea Mouse Sensory Phenotyping Center	South Korea	SEOKY@yuhs.ac
Seong	JeKyung	JK Seong	Korea	snumouse@snu.ac.kr
Seraphin	Bertrand	IGBMC	France	seraphin@igbmc.fr
Shin	NaRae	NaRae Shin	Korea	nr.kmpc@snu.ac.kr
Smedley	Damian	Damian Smedley	UK	damian.smedley@genomicsengland.co.uk

Sneddon	Duncan	MRC Harwell	UK	d.sneddon@har.mrc.ac.uk
Sorg	Tania	PHENOMIN-ICS	France	tsorg@igbmc.fr
Stewart	Michelle	MRC Harwell	UK	m.stewart@har.mrc.ac.uk
Svenson	Karen	The Jackson Laboratory	USA	karen.svenson@jax.org
Teboul	Lydia	MRC Harwell	UK	l.teboul@har.mrc.ac.uk
Tocchini-Valentini	Glauco	Consiglio Nazionale delle Ricerche	Italy	gtocchini@emma.cnr.it
Tolentino	Heather	Mouse Biology Program, UC Davis	USA	hatolentino@ucdavis.edu
Treise	Irina	HMGU	Germany	irina.treise@helmholtz-muenchen.de
TUDOSE	ILINCA	EMBL-EBI	UK	tudose@ebi.ac.uk
UEBERSCHLAG-PITIOT	Vanessa	IGBMC, Metzger's team	France	uebersch@igbmc.fr
VAN BOKHOVEN	Hans	Radboud university medical center	The Netherlands	Hans.vanBokhoven@radboudumc.nl
Vasseur	Laurent	PHENOMIN-ICS	France	vasseur@igbmc.fr
Vukobradovic	Igor	The Centre for Phenogenomics	Canada	igor@lunenfeld.ca
Wakana	Shigeharu	RIKEN BioResource Center	Japan	swakana@brc.riken.jp
Walling	Alison	MRC Harwell	UK	a.walling@har.mrc.ac.uk
Wang	Leo Chi-Kuang	NLAC, NARLabs	Taiwan	cklwang@nlac.narl.org.tw
WARREN	JONATHAN	EMBL-EBI	UK	jwarren@ebi.ac.uk
Wattenhofer-Donzé	Marie	PHENOMIN-ICS	France	wattenho@igbmc.fr
WEBER	Patrick	PHENOMIN-ICS	France	weberp@igbmc.fr
Wells	Sara	MRC Harwell	UK	s.wells@har.mrc.ac.uk
Wendling	Olivia	PHENOMIN-ICS	France	olivia@igbmc.fr
West	David	Children's Hospital Oakland Research Institute	USA	dwest@chori.org
White	Jacqui	Dr Jacqui White	UK	jkw@sanger.ac.uk
Willis	Brandon	UCDavis, Mouse Biology Program	USA	bjwillis@ucdavis.edu
YALCIN	Binnaz	IGBMC	France	yalcin@igbmc.fr
Yoon	ChaeRin	ChaeRin Yoon	Korea	cherry.kmpc@snu.ac.kr
Yoshiki	Atsushi	RIKEN BioResource Center	Japan	yoshiki@brc.riken.jp
Zapf	Lilly	Helmholtz-Zentrum München	Germany	lilly.zapf@helmholtz-muenchen.de

* IPAD-MD Expert Group members on Standards & Technology. Participants funded by European Union Horizon 2020 project IPAD-MD Grant Agreement number 653961.

4. Introduction & objectives

- IPAD-MD WP6 on Implementation of Standards and Technology is co led by Yann Herault, Phenomin-iCS and Steve Brown, MRC Harwell.
- The aims of the working group are to:
 - Assess the potential of novel technologies for application in INFRAFRONTIER and IMPC, taking into consideration the feedback of the stakeholder communities
 - Provide recommendations for the global quality standards and SOPs for novel technologies
 - Ensure input to the stakeholder engagement workshops and process stakeholder feedback
- The Genome Editing workshop has the following objectives:
 - to define a set of criteria/ guidelines/ best practice on archiving CRISPR lines, that could be implemented across repositories, given the experience collected across IMPC production centers
 - to developed a protocol on minimum data requirements optimized for high-throughput setting
 - to contribute to an INFRAFRONTIER position paper/guidelines on the 'Impact of CRISPR on repositories, IT and animal welfare' together with the results of the panel discussion during IPAD-MD Industry & Innovation Workshop Munich, June 2016

5. Major outcomes

- The genome editing workshop, chaired by Yann Herault, was structured with four opening presentations followed by a **round table discussion 'on the definition of the minimal set of information for CRIPSPR alleles'**
 1. Lauryl Nutter: the IMPC experience on large scale CRISPR/Cas 9
 2. Marie-Christine Birling: CRISPR Chromosome Engineering
 3. Xiang Gao: MARC'S experience on CRISPR/Cas9
 4. Jason Heaney: CRISPR experience at BCM
- A set of questions was used to efficiently steer the discussions:

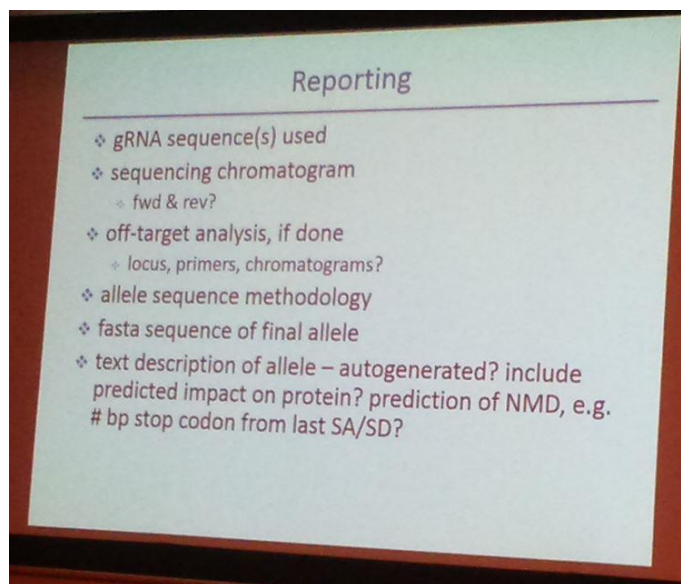
Technical Questions:

- What is the minimum information (& trace files) that should be displayed in IMITs (F0?, F1?)

- Allele complexity
 - What is the minimum/how many alleles should be archived?
 - At what stage should it be archived? F0? F1?
 - Which alleles should be archived? Only the full characterized allele?
 - Is 'complete genotyping' & characterization of all alleles a bottleneck?
- Mosaicism in founder animals:
 - Should only one founder be archived?
 - Should all founders be archived?

General Questions:

- How can the repositories be integrated in an 'soup to nuts' solution for users that have limited mouse biology expertise, high expectations (generation time and costs) and the growing demand on CRISPR generated models?
 - By advertising quality control and standardization?
 - By tackling animal welfare and (genetic) safety issues?
- Which other arguments can be used to promote the exchange of material in view of the CRISPR potential?
- The roundtable discussion was opened by Lauryl Nutter, TCP , Canada, focusing on the following points:



- Main **outcomes** of the round table discussion:
 - The need **to define a minimal set of information for archiving CRISPR alleles** is of uttermost importance
 - The existent **IMITS** (International Micro-Injection Tracking System) and its metadata constitute a valuable resource. Additionally the need for **data annotation** on potential gene function should be tackled.

- The need of **gold standards** and effective as **quality control of data** is of crucial importance to the IMPC effort, and this role will be fulfilled by the repositories in a concerted way with the production center
- A publication is currently being prepared by several IMPC production centers in which the **protocols and best practices on production of CRISPR alleles** will be described.

Presentations

The presentations are available for download at:

www.infracore.eu/internal/ipad-md/expert-group-meetings

6. Action Points:

What	Who	When
Organization of a roundtable on 'Impact of CRISPR technology on repositories, IT & animal welfare' during the INFRAFRONTIER IPAD-MD Industry & Innovation Workshop', June 2016, Munich	AC	June 2016
Production of an internal document on the main outcomes of both round table discussions on CRISPR Technologies (April 2016, Strasbourg; June 2016, Munich)	AC	July 2016

(AC=Ana de Castro;)

Report: Ana de Castro (INFRAFRONTIER GmbH, WP2), Steve Brown (MRC Harwell, WP6) and Yann Hérault (Phenomin-iCS, WP6)