Project Acronym: [TRANSMECH

Project title: [The role of translational dysregulation in sensory neurons in mediating tactile hypersensitivity in neurodevelopmental disorders.]

DATA MANAGEMENT PLAN

v1.1

1. Data Summary

What is the purpose of the data collection/generation and its relation to the objectives of the project?

Approximately 95% of people diagnosed with Autism Spectrum Disorder (ASD) have difficulty processing everyday sensory information, while 60% display altered touch sensation, which can have a profound effect on a person's life. During development, gentle touch communication between mother and infant is essential for proper development of complex behaviours, such as social interaction. Over-sensitivity to touch is observed both in ASD patients and in engineered mouse models carrying mutations of genes linked to ASD. Over-sensitivity to touch in ASD patients may be linked to behavioural alterations such as deficits in social interaction. We do not fully understand the mechanisms that account for touch over-sensitivity in ASD. While the precise causes of ASD are unknown, it is established that several risk genes are associated with this disorder. A molecular/cellular pathway that is linked to these ASD risk genes and is commonly affected in ASD patients is the regulation of protein synthesis. Selective activation of protein synthesis only in sensory neurons in mice induced increased synthesis of proteins linked to mitochondria, the cell's powerhouses, which have a central role in energy metabolism. Thus, we hypothesise that this pathway may be responsible for touch oversensitivity in neurodevelopmental disorders, such as ASD, by favouring the synthesis of certain proteins over others (e.g. mitochondrial proteins). To test this hypothesis in project TRANSMECH, we will use mouse models and human sensory neurons carrying mutations in risk genes found in ASD patients. Understanding this mechanism will lead to the development of novel therapies for treating touch oversensitivity in ASD and also for reversing the core symptoms of ASD (e.g. social behaviour alterations).

What types and formats of data will the project generate/collect?

Type of data	**Origin**	**Data file type**
Analytical data	Seahorse FX, Electrophysiology, all biochemical experiments	Tabular data with minimal analysis:.csv; .tab; .xls; .xlsx, .txt
Imaging data, i.e. images and videos	Behavioural analysis, Imaging (e.g. confocal microscopy)	.tif, .jpeg, .pdf, .psd, .png, .bmp, .mp4
Data from OMICs	RNA sequencing, Ribosome profiling	Sequence file format: FASTA Tabular data with minimal analysis:.csv; .tab; .xls; .xlsx, .txt After statistical analysis: .por; SPSS

All data will be collected in standardized templates according to standard operating protocols (SOPs) and formal procedures for data management (ensuring privacy, anonymization/blinding to genotype & restricted access).

Will you re-use any existing data and how?

Gkogkas lab

No

Khoutorsky lab

Yes – preliminary data outlined in proposal regarding 4E-BP1 mice.

Lewin lab

No

What is the origin of the data?

Gkogkas lab

iPSc-derived sensory neurons from control and mutated genes linked to ASD.

Khoutorsky lab

Conditional mouse models

Lewin lab

Conditional mouse models

What is the expected size of the data?

Gkogkas lab

5-10 TB

Khoutorsky lab

2-5 TB

Lewin lab

2-5 TB

To whom might it be useful ('data utility')?

All data will be useful for the Autism Research and the broader Neuroscience Research community. The research community, policy makers (at EU, National and International levels). We expect that the data will be useful in other more indirect applications related to policy development, public health and industry decision making. Data management costs will be borne by the data owner and access costs by the data user.

2. FAIR data

2. 1. Making data findable, including provisions for metadata

Are the data produced and/or used in the project discoverable with metadata, identifiable and locatable by means of a standard identification mechanism (e.g. persistent and unique identifiers such as Digital Object Identifiers)?

What naming conventions do you follow?

Naming of all TRANSMECH data files:

[PARTNER]_[TITLE]_[DD/MM/YYYY]_[DATATYPE]_[VersionX].[extension]

Where:

Partner = P1, P2 or P3 (P1: FORTH, P2:MCGILL, P3:MDC)

DATATYPE = T1, T2 or T3 (T1: Analytical Data, T2: Imaging, videos, T3: OMICS)

Will search keywords be provided that optimize possibilities for re-use?

N/A

Do you provide clear version numbers?

Yes

What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.

N/A

2.2. Making data openly accessible

Which data produced and/or used in the project will be made openly available as the default? If certain datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions.

Omics data

Protocols

The rest of the data will be made available after publication – the partners would like to explore IP and exploitation opportunities (e.g. therapeutics) before making data freely available.

Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if relevant provisions are made in the consortium agreement and are in line with the reasons for opting out.

How will the data be made accessible (e.g. by deposition in a repository)?

Omics data will be deposited to repositories e.g., Gene expression Omnibus (GEO)

Protocols will be submitted to Zenodo.

What methods or software tools are needed to access the data?

Apart from custom programs, scripts, commercially available software is used and will be outlined.

Is documentation about the software needed to access the data included?

No

Is it possible to include the relevant software (e.g. in open source code)?

Where possible it will be done.

When custom code is used, it will be deposited to GitHub.

Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.

Zenodo

Have you explored appropriate arrangements with the identified repository?

No

If there are restrictions on use, how will access be provided?

No

Is there a need for a data access committee?

No

Are there well described conditions for access (i.e. a machine readable license)?

Yes

How will the identity of the person accessing the data be ascertained?

N/A

2.3. Making data interoperable

Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?

No specific actions were undertaken to ensure interoperability of the data during the project. Data generated were stored and analyzed locally in commonly used formats (e.g., .csv, .xlsx, .tif, .mp4, FASTA), but no additional work on metadata standards, vocabularies, or mappings was performed. As such, data exchange or re-combination with external datasets was not implemented.

What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?

See statement above

Will you be using standard vocabularies for all data types present in your data set, to allow inter-disciplinary interoperability?

See statement above.

In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?

2.4. Increase data re-use (through clarifying licences)

How will the data be licensed to permit the widest re-use possible?

Data included in publications has been deposited to public repositories e.g. GEO.

Data that may lead to IP have 1-year embargo and are available only within the consortium.

When will the data be made available for re-use? If an embargo is sought to give time to publish or seek patents, specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.

1-year embargo

Are the data produced and/or used in the project useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.

See above.

How long is it intended that the data remains re-usable?

10 years

Are data quality assurance processes described?

No

Further to the FAIR principles, DMPs should also address:

3. Allocation of resources

What are the costs for making data FAIR in your project?

Cannot be calculated – participating institutions provide this.

How will these be covered? Note that costs related to open access to research data are eligible as part of the Horizon 2020 grant (if compliant with the Grant Agreement conditions).

Participating institutions have dedicated budgets for these.

Who will be responsible for data management in your project?

Dr. Christos Gkogkas, FORTH

Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?

The consortium has agreed for primary data to be available for 5 years after the end of the project.

4. Data security

What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?

During the duration of the project, data are stored and backed up in institutional repositories. Data that will be shared and available after project end will be deposited to repositories that have data security measures in place (e.g. ELIXIR)

Is the data safely stored in certified repositories for long term preservation and curation?

After project end.

5. Ethical aspects

Are there any ethical or legal issues that can have an impact on data sharing? These can also be discussed in the context of the ethics review. If relevant, include references to ethics deliverables and ethics chapter in the Description of the Action (DoA).

N/A

Is informed consent for data sharing and long term preservation included in questionnaires dealing with personal data?

N/A

6. Other issues

Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?

All partners have data servers with back-up capacities with sufficient space. Also the labs have NAS servers for data exchange between lab members.

7. Further support in developing your DMP

The Research Data Alliance provides a Metadata Standards Directory that can be searched for discipline-specific standards and associated tools.

The EUDAT B2SHARE tool includes a built-in license wizard that facilitates the selection of an adequate license for research data.

Useful listings of repositories include:

Registry of Research Data Repositories

Some repositories like Zenodo, an OpenAIRE and CERN collaboration), allow researchers to deposit both publications and data, while providing tools to link them.

SUMMARY TABLE 1

FAIR Data Management at a glance: issues to cover in your DMP

This table provides a summary of the Data Management Plan (DMP) issues to be addressed, as outlined above.

DMP component	Issues to be addressed
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards

	in your discipline describe what type of metadata will be created and how

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

HISTORY OF CHANGES		
Version	**Publication date**	**Change**
1.0	15.03.2022	▪ Initial version
1.1	31.08.2025	▪ Final version