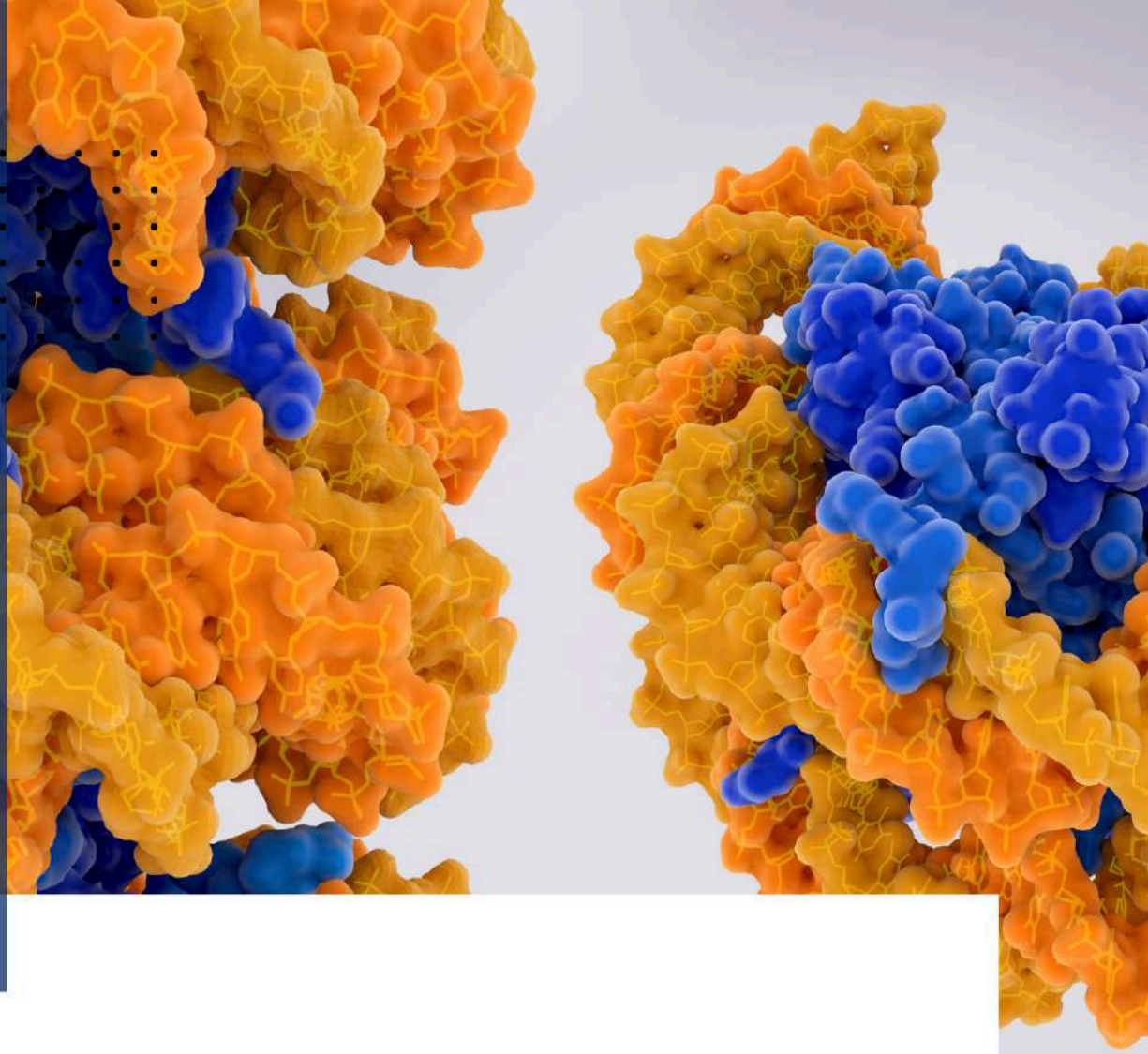
IRTG CONNECT-A-THON



CALL FOR RESEARCH GRANTS

Fueling innovation in chromatin research through collaboration!

Research Topic: Unrestricted
Research Duration: Unlimited

SUBMISSION DEADLINE:

14.03.2024

SFB1064

IRTG

Table of Contents

IRTG 1064 Retreat, March 13-15, 2024

IRTG Connect-a-thon

Ringberg Castle

	Wednesday, March 13	Thursday, March 14	Friday, March 15
Breakfast 8.00-9.00		Breakfast 8.00-9.00	Breakfast 8.00-9.00
09.00		Science: Group project work	Rally
		10.30 Coffee break	10.30 Coffee break
11:00		Science: Group project work	IRTG General Assembly: What do we still need? Final goals?
		Lunch 12.30	Lunch 12.30
14.00	12:45 Meet at Munich Hbf, track 34 13:04 depart Munich, train RB57 Arrive Tegernsee 14:09 Chartered bus to castle	Science: 3 presentations	Departure bus 14.00 Departure train from Tegernsee 14:52 Arrive Munich 15.57
	Arrive approx.15.00 Check-in	15.30 coffee break	
16.00	17.30 Tour of castle	Science: 3 presentations	
	18.30 Dinner	18.30 Dinner	
Evening	Groups get together, introductions Instructions for IRTG-connect-a-thon Pub quiz	Award ceremony *Celebration!*	

Schloss Ringberg, Schloßstraße 20, 83700 Reitrain

IRTG Connect-a-thon: Call for research grant proposals

Your Graduate Program announces a groundbreaking funding opportunity, but with a twist – applicants must propose group projects with other PhD students. The grant aims to bring out the collaborative potential within the IRTG students' community.
Given that you would have all necessary resources at your disposal, and working as a group in collaboration, what scientific question would inspire your group, or what innovation could you develop together?

Goals:

- Exchange of the student's expertise gained during the duration of their doctoral research;
- By combining the diverse expertise within the field of chromatin research, we can unlock high potential for innovation;
- Exploring potential in the IRTG for collaboration and fostering new connections between students;
- Promoting the idea that by working together, we are empowered to push the boundaries of science.

Procedure:
Wed: Group get-togethers. Ice-breakers and introductions. Determine what talents, interests and expertise are in your group.
Wed/Thurs: Draw up and present a collaborative project proposal.

- Written form: Complete the proposal form for submission and documentation.
- (Thurs) Presentation: The format for presentation is flexible, open to your own ideas and creativity (e.g. pitch, graphical scheme, advertisement, model presentation, sketch). Time frame: approx. 10 min + 5 min discussion. Presentations should include the following:
    - What is the scientific question?
    - How does the collaboration benefit the project?
    - What are the contributions from the partners?
    - What is the mutual benefit?

On Thursday evening we will vote on a winning proposal. Criteria for choosing successful proposal are: innovation, potential impact in the field, creativity, inclusion of members.

Rules:

- It has to apply to chromatin (or epigenetics).
- Use the expertise/talents of everyone in the group – everyone makes a contribution.
- Be creative! Be innovative! This does not have to be a realistic proposal! You are permitted to speculate about potential methods, results, outcomes … (i.e. delving into the realm of science fiction), but you can also work with current real possibilities (i.e. can we change something for the better now, or discover something new with a bit of outreach?)
- Please address your project's considerations on ethics, sustainability, science communication, diversity.

1

	Model organism	Title of project	Two top methods
Frauke Huth		Long Fibre Sequencing in Yeast	Nanopore-Seq and Snakemake pipelines
Fotios Gkountromichos		The role of lncRNA roX in dosage compensation *in vivo*	Immunofluorescence and CUT&RUN
Sude Beskardes		Interrogation of enhancer-promoter interactions using massively parallel reporter assay	Massively Parallel Reporter Assay (MPRA), editing
Yanshuang Yin		Epigenetics	Western blot
Emilia Cepowska		LRWD1 protein in regulation of DNA replication	CUT&RUN, Confocal microscopy, Flow Cytometry, CRISPR-Cas9 genome editiing, AID-degron, dTAG
Lukas Huschet		Protein and phosphorylation nuclear dynamics in time and space and its modulation by metabolism	Mass spectrometry proteomics and time course analysis

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	Two Minutes (1)	Date:	14/03/24

Project Title:

EvoGenesis Project: Directed Evolution for Planetary Transformation

Short desription of the reseach (methods, duration, materials, model organisms):

The EvoGenesis Project aims to harness the power of directed evolution to engineer unicellular organisms capable of thriving in extraterrestrial environments, with a primary focus on terraforming initiatives for planet like Mars.

We will use oxygen-producing algea and enpineer them using both directed evolution and gradual exposure. By combining different multiomic approaches, we aim to identify fundamental principles driving adaptability in extreme conditions.

In the span of 10 years, we aim to publish scientific findings and collaborate with space institutions such as NASA and patenting and establishing a start-up to cammerciolize end-product in Earth, too.

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		X

Explain below what innovations and impact the project will bring?

Expected outcomes:

- Innovative Bioforms: Development of genetically and epigenetically optimized unicellular organisms with proven capabalities in supporting terraforming activities on Mars or similar environments.
- Strategic Insights: Identification of key genetic and epigenetic traits essential for survival and ecological transformation in extraterrestrial conditions, providing a blueprint for future bioengineering effort.
- Terraforming blueprints: A foundational strategy for utilizing directed evolution in planetary terraforming, offering a novel and scalable approach to making extraterrestrial environments habitable

Impact of the research project:

The EvoGenesis Project represents a groundbreaking step towards making life sustainable on other planets. By elucidating the genetic and epigenetic foundations of extraterrestrial adaptability, this initiative paves the way for bioengineering solutions that could revolutionize space colonization and our understanding of life's potential beyond Earth.

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	X	
Widely-used datasets	X	
Software	X	
Goods	X	
Services	X	
Other achievements relevant to the call content: GMO Algae biological material		

Please list the main methods used in the research project.

Key methods	Multi-omics	& analysis,	ATAC-RNA	Methyl-seq
	3D-RAM-seq	Mass-spec	Histone PTM	mass-spec

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	**Comments**
1	Science communication	Excite general public / convince them of usefullness of research
2	Diversity	all members from different country! 6 parties = 6 nationalities

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)* NASA + LMU + Helmholtz
4	Scientific community	Very close, interactive working enviroment

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	1000 000 000 ChIPC
Duration (in years)	10 - 15 years

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

Combining 6 different creative young researches who found one common goal!

No	Name of Partner	Responsibilities and type of services to be performed
1	NASA	Launch mission on Mars. Provide rocket. Replicate planetary conditions
2	Emilia	cut & run, epigenomics experise. Invites from Dr. Bartke Lab
3	Fotios	~~Coltab cultures~~, genome-wide seq experise
4	Frauke	Apply AI algorithms, bioinfo experise. datamanagement
5	Jude	3D-RAM seq, € accessibility, transcriptomics, 3D-genome
6	Lukas	Mass-spec expertise for Histone PTMs, proteomics
7	Yangshuai	DNA-methylation,

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?		X
Does this activity involve the use of human embryos?		X
Does this activity involve human participants?		X
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?		X
Does this activity involve processing of personal data?		X
Does this activity involve animals?		X
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	X	
Does this activity deal with endangered fauna and/or flora / protected areas?		X
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	? X	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?		X
Does this activity aim at human cloning for reproductive purposes?		X
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?		X
Are the activities intended to be used in military application or aiming to serve military purposes?	X	
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		X
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)		X
Are there any other ethics issues that should be taken into consideration?		X

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	X	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	X	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call		

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.	X	
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	X	
Other achievements relevant to the call content:		

2

	Model organism	Title of project	Two top methods
Andrea Fratton		Single-cell multiscale epigenome profiling of Alzheimer's disease	Single-cell EM-seq, single-cell Hi-C
Gizem Kars		Site-specific recruitment of Domino Complex	CUT&RUN, *in vitro* Chromatin Assembly
Swathi Subramanian		Exploring the regulation of ChREBP transcription factor in maintaining balance within the glucose-to-fat homeostasis	Cell culture, western blot
Lara Kopp		Towards early cancer detection and tumor classification using epigenomic biomarkers in blood	ChIP-Seq, Protein Purification
Prateek Yadav		Visualization of genome architecture	FISH, imaging
Bihter Özdemir Aygenli		Functional Characterization of E3 ubiquitin ligase UHRF1	Recombinant protein purification, enzymatic activity assays
Gabriele Malagoli		Explainable graph neural networks to discover biological signatures in sc-ATAC seq data	computational analyses, single-cell multiomics

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	~~EpiAI~~ OmiAI	Date:	14-03-2024

Project Title: Leveraging Multiomics & AI for Disease Detection and Dietary Intervention

Short desription of the reseach (methods, duration, materials, model organisms):

The global changes in modern dietary patterns and sedentary lifestyles have led to the surge in diseases such as diabetes and cancer, necessitating urgent advancements in diagnostic strategies for early prediction and improved prognosis. Our 5-year approach involves developing a novel AI model, leveraging diverse model organisms from Drosophila to human cells. We will integrate various methodologies including proteomics, metabolomics, scATC seq and imaging techniques to curate comprehensive omic datasets for training and validation.

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		✓

Explain below what innovations and impact the project will bring?

(1) Prediction of diseases in very early stages for early + optimal treatment → better patient viability

(2) Develop a novel AI model to apply to this diagnosis process; trained on massive amounts of data → world-wide accessible

(3) Combine in innovative, small, wearable machine for mass production / small volume blood tests

(4) Prevention: Diet-based & personalized treatments

Impact of the research project:

Generation of Biomarker Atlas for diseases
Prediction and early diagnosis
Technology development : Novel screening of diseases
Personalized dietary prevention of diseases

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	✓	
Widely-used datasets	✓	
Software	✓	
Goods	✓	
Services	✓	
Other achievements relevant to the call content:		

Please list the main methods used in the research project.

Key methods	CUT&Tag	Imaging	Nanopore	scATAC
	AI	ML	RNA seq	Proteomics
	Cell culture			

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	**Comments**
1	Science communication	Yes - Seminars, public outreach, conferences
2	Diversity	Yes

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)* 7 PI + Engineering team + Medics + Hospitals
4	Scientific community	Yes

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	1 Billion 64 Million
Duration (in years)	5+5

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

No	Name of Partner	Responsibilities and type of services to be performed
1	Birter	methylation Analysis, SNP detection
2	Andrea	Multiome Analysis Alzheimer's Dataset
3	Gabriele	AI
4	Swathi	Metabolic studies - Drosophila
5	Pradeek	Sc-RNA1 Imaging, Proteome
6	Lara	Read & Toy, Cell free sample dataset
7	Gizem	CHIP Cut/Run, Disease models

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?	✓	
Does this activity involve the use of human embryos?		✓
Does this activity involve human participants?	✓	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?	✓	
Does this activity involve processing of personal data?	✓	
Does this activity involve animals?	✓	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?		✓
Does this activity deal with endangered fauna and/or flora / protected areas?		✓
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?		✓
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	✓	
Does this activity aim at human cloning for reproductive purposes?		✓
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?		✓
Are the activities intended to be used in military application or aiming to serve military purposes?		✓
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		✓
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)		✓
Are there any other ethics issues that should be taken into consideration?		✓

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	✓	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	✓	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call	✓	

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.	✓	
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	✓	
Other achievements relevant to the call content:		

3

	Model organism	Title of project	Two top methods
Janet Tait		Histone Methylation in Xenopus Multiciliated cells	RNA seq, Confocal microscopy
Alex Starokadomska		Transcriptional mechanisms regulate the CrebA transcription factor in response to the nutrient intake	Western Blotting, qPCR
Iliya Nadelson		Cis-regulatory Logic of Gene Regulation in Early Mammalian Development	FISH, Image analysis
Lorenz Spechtenhauser		Nucleosome remodeling mechanisms (of RSC) studied by long-read single molecule DNA methylation footprinting	long read sequencing, protein purification
Ana Janeva		Histone acetylation as a barrier to cell fate reprogramming	RNA-seq, ChIP/CUT&RUN
Tamina Dietl		Dissecting epigenome evolution in primates using single-cell multiomics	computational analyses, single-cell multiomics

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	TAILORED TAILS	Date:	14/03/2024

Project Title:

TAILBLAZING EVOLUTION: Solving humanity's problems one swoosh at a time

Short desription of the reseach (methods, duration, materials, model organisms):

we will address all of the world's major problems by bringing tails back to people. Through a multistep plan of:

1. in silico modelling of tailed + non-tailed primates
2. in vitro testing of candidate genes
3. Use of frog embryos for early testing
4. generation of tail organoids
5. mouse models to test organoid implantations
6. Human clinical trials (mars FDA pre-approved)
7. Nutritional + metabolic studies.

we will usher in a new tailed world, opening up a new avenue for humans to advance and to end climate change, unemployment, world hunger, and the dreaded PhD (pipetting hand disease)

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		X

Explain below what innovations and impact the project will bring?

The main innovation is that humans will have customizable tails to assist in every day life. This will change the way we commute, eliminating the need for cars within cities. The tails will be skeletable + edible™ eliminating world hunger, and they can assist in tasks like cleaning castles and pipetting. The potential benefits to society are endless!

Impact of the research project:
On previous page.

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	X	
Widely-used datasets	X	
Software	X	
Goods	X	
Services	X	
Other achievements relevant to the call content: TAILS 4 ALL!	X	

Please list the main methods used in the research project.

Key methods	IN SILICO MULTI-OMICS SCREENING	EMBRYO MRNA OVEREXPRESSION		
	IN VITRO BIOCH. ASSAYS	GENETIC PERTURBATIONS		
	ORGANOID & STEM CELL CULTURE	DIETARY STUDIES		

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	**Comments**
1	Science communication	Yes, tails 4 all
2	Diversity	Yes, tails 4 all

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)* large extent
4	Scientific community	Broad expertise

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	All the coins & more
Duration (in years)	10 (=5+5)

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

wide expertise in wet & dry lab cross-cultural & cross-disciplinary multifaceted cohesive team addressing all angles of the project

No	Name of Partner	Responsibilities and type of services to be performed
1	Janet Tait	vibes outreach & science communic.
2	Ilya Nadelson	mouse models & experiments
3	Lorenz Spechtenhauser	in vitro biochemistry
4	Tamina Diehl	in silico screening & organoids
5	Alex Starokadomska	dietary optimization (mice & humans)
6	Ana Janeva	Xenopus OE & tailloss studies
7	collaborator Dr. X	human experiments

all participants are doctors :P

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?	X	
Does this activity involve the use of human embryos?		X
Does this activity involve human participants?	X	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?	X	
Does this activity involve processing of personal data?	X	X
Does this activity involve animals?	X	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?		X
Does this activity deal with endangered fauna and/or flora / protected areas?		X
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	X	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	X	
Does this activity aim at human cloning for reproductive purposes?		X
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?	X	X
Are the activities intended to be used in military application or aiming to serve military purposes?		X
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		X
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)		X
Are there any other ethics issues that should be taken into consideration?	X	

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	X	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	X	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call	X	

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.	X	
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	X	
Other achievements relevant to the call content:	X	

4

	Model organism	Title of project	Two top methods
Zhibek Keneskhanova		Antigenic variation in *Trypanosoma brucei*	scRNA-seq, bulk RNA-seq
Beyza Bozdag		Deciphering the Regulation of Histone Post-Translational Modifications Using Drosophila Melanogaster Embryo Extracts	Mass spec
Jingwen Liu		Epigenetics	Immunofluorescence, Western blot
Johannes Trefz		PanPTMs: Study of multiple PTMs from the same sample within single mass spec measurement that should facilitate streamlined analysis of crosstalk among PTMs	Enrichment of phosphorylated, ubiquitinylated, and acetylated peptides for MS measurement
Viola Gilardino		Role of JII-1/JASper complex in genome stability	qDRIP-seq
Jei Diwakar		Development of a novel sc-multiomics method to track 3D genome architecture, DNA Methylation, Accessibility and RNA expression	Chromatin Conformation, Split pool barcoding

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	Fantastic 5-1 4	Date:	2024-03-14

Project Title:	ProxiGen: mapping tomorrow's health today

Short desription of the reseach (methods, duration, materials, model organisms):

Our aim is to build and make diagnostic tools more accessible to people. We are planning to accomplish this by 1) designing a miniturised version of MS that patients can use daily to track relevant parameters; 2) developing multi-omics techniques that would provide ~~Our major focus is~~ integrated comprehensive information on genetic and epigenetic landscape, and 3) tailoring treatment approaches to each patient using multi-omics data and ~~in vitro~~ reconstructed tissues. Our major focus is on ~~neuro~~ early diagnostics and personalized therapeutics for neurodegenerative diseases. We would use our miniturised MS device to probe cerebral spinal fluid (CSF) of patients for early detection, individual treatment options and preventive measures against

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		✓

Explain below what innovations and impact the project will bring?

Our research project has three major innovative aspects. Firstly, our mini-MS device will eliminate the need for large amounts of tissue samples, lengthy processing times and will make complex diagnostic tools more accessible to patients. The device will be designed in the form of a patch that could sample patients' CSF daily, and, thus, allowing tracking of crucial biomarkers for early detection of neurodegenerative diseases. Secondly we will develop integrated multi-omics technique that encompasses various single cell methods (Hi-C, DNA methylation, accessibility, RNA-seq, etc.) to provide nearly exhaustive information on cell/tissue state.

Impact of the research project:

Thirdly, our multiomics data will help us and the patients to reconstruct tissues in vitro and test different treatment approaches and drugs for precision medicine. As a potential extension of this particular aspect of the project we will lay the foundation for organ and organoid development.

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	✓	
Widely-used datasets	✓	
Software	✓	
Goods	✓	
Services	✓	
Other achievements relevant to the call content:	✓	

Please list the main methods used in the research project.

Key methods	Mass spectrometry	DNA accessibility (ATAC-seq)	RNA-sequencing (bulk & single-cell)	DAM-ID
	Hi-C (3D genome)	In vitro tissue reconstruction	Integrated multi-omics	

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	**Comments**
1	Science communication	Extremely important as we are directly providing the means to patients to track their health on their own
2	Diversity	Our team is an international group w/ expertise and collaborative potential across the globe

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)* We have 6 people in the team, each an expert in his/her corresponding field
4	Scientific community	We are planning to build an extensive scientific community spanning both academia and industry

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	1.6 billion chip coins
Duration (in years)	10 years

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

This consortium will bring together experts in the field of epigenetics, 3D genome architecture, sequencing technologies, protocols to

No	Name of Partner	Responsibilities and type of services to be performed
1	Beyza Bozdag	In vitro tissue/organ reconstruction based on comprehensive epigenetic landscape data
2	Jei Diwakar	developing multiome technique to provide comprehensive epigenetic landscape data
3	Jingwen Liu	In vitro reconstruction based on all encompassing epigenetic landscape data
4	Johannes Trett	Development of minit-IVS device patch for simultaneous sample acquisition & processing
5	Victor Gilardino	Development of mini-IVS device patch for simultaneous sampling & processing of data
6	Zhibek Keneshbanova	development of multi-omics technique (w/ the forces of RNA-seq) to build comprehensive datasets
7		

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?		✓
Does this activity involve the use of human embryos?		✓
Does this activity involve human participants?	✓	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?	✓	
Does this activity involve processing of personal data?	✓	
Does this activity involve animals?		✓
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?		✓
Does this activity deal with endangered fauna and/or flora / protected areas?		✓
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?		✓
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	✓	
Does this activity aim at human cloning for reproductive purposes?		✓
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?		✓
Are the activities intended to be used in military application or aiming to serve military purposes?		✓
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		✓
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)		✓
Are there any other ethics issues that should be taken into consideration?		✓

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	✓	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	✓	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call	✓	

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.	✓	
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	✓	
Other achievements relevant to the call content:		✓

5

	Model organism	Title of project	Two top methods
Simona Nasiscionyte		Cell cycle regulation of IDR phosphorylation	Cell cycle synchronisation and flow cytometry
Chondamma Bollachettira		Identification and Functional Characterization of Transcription Factors Sensitive to DNA methylation	Mass-spectrometry, ChIP-sequencing
Angela Russo		ERVs silencing through heterochromatin formation in different cell types	ChIPseq, ATACseq
Muhammet Celik		Intercellular communication and GRNs	
Gabriela Stumberger		Topologies of complex promoter - enhancer interactions	FISH, automated image analysis
Drin			
Karl Olsen		How to build epigenetic boundaries	ChIP/Yeast genetics

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	MERF Initiative	Date:	14/03/2024

Project Title: Chromatin Dynamics of Extremophiles in the face of global challenges.

Short desription of the reseach (methods, duration, materials, model organisms):

In the face of global challenges, including temperature changes and the potential of nuclear fallout, extremophiles can offer a deeper understanding of how to adapt to these challenges. Over the period of 5 years, we aim to elucidate the chromatin dynamics underlying extremophiles. Furthermore, such insights could be leveraged in higher eukaryotes to encounter global threats. By combining high throughput multi-omic and imaging approaches we will generate comprehensive datasets of chromatin landscapes.

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		✓

Explain below what innovations and impact the project will bring?

Advanced databases in extremophiles, filling a large gap in Research in the context of chromatic dynamics + interspecies transferability.

Impact of the research project:

Mass impact on basic research with implications for the survival of species in extreme conditions.

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	✓	
Widely-used datasets	✓	
Software	✓	
Goods		✓
Services	✓	
Other achievements relevant to the call content:		

Please list the main methods used in the research project.

Key methods	multiomic sequencing	super resolution microscopy	in vitro assembly	Mass spectrometry
	cell culture	flow cytometry	FISH	

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	Comments
1	Science communication	Yes - different fields are brought together
2	Diversity	Yes - DCV; international

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)*
4	Scientific community	

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	15
Duration (in years)	5-7

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

No	Name of Partner	Responsibilities and type of services to be performed
1	Chondamma Bollachatra	Proteomics facility
2	Dran Sloban	In vitro + biochem f.
3	Gabriela Stumberger	Imaging f.
4	Mohamed Celik	Bioinformatics f.
5	Simona Narsciongte	Radiotrophics.
6	Karl Olsen	multiomics f.
7		

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?	✓	
Does this activity involve the use of human embryos?		✓
Does this activity involve human participants?		✓
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?		✓
Does this activity involve processing of personal data?		✓
Does this activity involve animals?	✓	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	✓	
Does this activity deal with endangered fauna and/or flora / protected areas?		✓
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	✓	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?		✓
Does this activity aim at human cloning for reproductive purposes?		✓
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?		✓
Are the activities intended to be used in military application or aiming to serve military purposes?		✓
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		✓
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)		✓
Are there any other ethics issues that should be taken into consideration?		✓

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	✓	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	✓	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call	✓	

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.		
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	✓	
Other achievements relevant to the call content:		

6

	Model organism	Title of project	Two top methods
Jessica Furtmeier		Genomewide study for replication efficiency	Replication assay and Sequencing
Muhunden Jayakrishnan		Leveraging in vitro chromatin reconstitution to study genome organization	ChIP-seq, Bioinformatics
Deeksha		Investigating the role of the starter cell transcription factor network in direct reprogramming	CRISPR/Cas9, scRNA sequencing
Namisha Rakesh		Mapping combinatorial chromatin states using engineered chromatin readers in Stem cells and differentiated cells	Chip-Seq, Mass Spectrometry
Clara Hermant		Regulation of transposable elements during preimplantation development	single embryo RNA-seq / Phylogenetic analyses
Kiryl Kavaliou		Unraveling the Mechanism of Rad51: Homology Search during Double Strand Breaks in Trypanosoma brucei	Microscopy, ChIP-seq

1064

SFB1064 Chromatin Dynamics

DATE March 14, 2024

PAY TO THE ORDER OF Red Planet Resilience

1,064,000,000.00

One billion, sixty-four million ---------- and 00/100 ChIP COINS

MEMO IRTG Connect-a-thon

SFB1064 Chromatin Dynamics

IRTG Connect-a-thon

Form 1: Proposal submission form

Name of Proposer Group:	THE SALTY PRETZELS [6]	Date:	14-3-24

Project Title: RED PLANET RESILIENCE: Tardigrade genetic screen to support extraterrestrial human settlement

Short desription of the reseach (methods, duration, materials, model organisms):

METHODS:
- Bioinformatic analyses (genomics & phylogenetics)
- Mol. bio, cell culture, chromatin engineering
- CRISPR screening & microscopy
- Embryo manipulation
- Radiation testing [in collab. w/ NASA]

DURATION
- Phase 1 (validation): 5 years
- Phase 2 (in vitro studies): 5 years
- Phase 3 (mouse models): 5 years +
- Phase 4 (implementation): ~30 years

MATERIALS: Cell culture facility, mouse facility, ET simulator (w/ NASA), clinics

MODEL ORGANISMS: Tardigrade, mouse, human.

	Yes	No
Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under any EU programme, including the current call?		✓

Explain below what innovations and impact the project will bring?

As humankind begins to experience the most adverse of effects of climate change, we seek to explore avenues to ensure our continued survival. While existing research focuses on enhancing earthly survival, our objective is to explore an alternative. With this project we aim to exploit the survial capabilities and resilience of the humble tardigrade (Phylum: Tardigrada) to ultimately adapt humankind to extra-terristrial environment. We will perform phylogenetic analyses and a genetic screen to elucidate factors confering stress ~~toto~~ tolerance to the tardigrade. We will validate these factors in vitro (mouse and human cells) using an E.T simulator (In collaboration with NASA)

Impact of the research project:

~~into~~ Our long-term perspective involves selective editing of the human genome for enhanced adaptability ~~to~~ ~~de~~ adverse environments. In the event of a catastrophic end to ~~the~~ sustainable life on earth, with our research we aim to provide a worst case scenario solution by ultimately providing a way to survive in outer space.

Please mark the potential outcomes of your project.

Potential Outcomes	Yes	No
Publication	✓	
Widely-used datasets	✓	
Software	✓	
Goods		✓
Services	✓	
Other achievements relevant to the call content:	✓	

Please list the main methods used in the research project.

Key methods	EMBRYOS HANDLING	BIOINFORMATICS	CRISPR SCREENS	GENOMICS [DNA, RNA, Chromatin-Seq]
	MICROSCOPY	CELL CULTURE	~~FACE~~ FACS	AEROSPACE ENGINEERING

Please address listed aspects of your research. In the comment section, specify if the proposal brings the aspects into consideration (yes/no) and to what extent. It is optional but advised to briefly describe how the project can incorporate those areas, how can you impact or improve them?

	Aspect	Comments
1	Science communication	We want to raise awareness about the current situation, and allow people to decide for an alternate future
2	Diversity	Our team consist of scientists from diverse background. We also aim to keep expanding the team and employ scientists from underprivileged backgrounds.

3	Extent of collaboration	*(How many collaborating parties? What is the added value through collaboration?)* 6 core collaborators = bioinformatician 2 crisscreen experts, 1 cell culture expert, 1 radiation expert, 1 embryologist!
4	Scientific community	⊕ external collaboration with NASA & fertility cliniques.

We aim to be open science, & our approaches might allow others to apply our approaches to other challenging questions

Please provide details regarding the financial standing and expected duration of the project.

Predicted Budget (in ChIP coins)	1 billion ChIP coins.
Duration (in years)	phase I: 5y phase III: 5 years phase II: 5y. phase IV: 30 years

Provide a brief overview of your scientific community and elucidate the advantages of engaging in collaborative projects. Specify the names of all project members and outline their key responsibilities within the consortium.

About Scientific Consortium:

Highly skilled, very international consortium with representative members of all ~~top~~ major fields of biology.

No	Name of Partner	Responsibilities and type of services to be performed
1	JAY	Bioinformatician - ↳ genomics,
2	DEEKSHA	CRISPR SCREEN EXPERT I ↳ screen set up, performing ⊕ cells handling Tartigrade expert.
3	NAMISHA	cell culture models expert. ↳ All KI validation
4	KIRYL	CRISR SCREEN EXPERT II (mostly microscopy expert) screen set up with B.
5	JESSICA	RADIATION EXPERT - setting up the ET simulator ↗ in vitro ↘ in vivo
6	CLARA	Embryologist. Gnetic engineering MOUSE & HUMAN?
7	ELISABETH (NASA)	Aerospace engineering

Ethics & Security

	Yes	No
Does this activity involve Human Embryonic Stem Cells (hESCs)?	✓	
Does this activity involve the use of human embryos?	✓	
Does this activity involve human participants?	✓	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study particip Does this activity involve the use of human cells or tissues?	✓	
Does this activity involve processing of personal data?	✓	
Does this activity involve animals?	✓	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	✓ in controlled environment	
Does this activity deal with endangered fauna and/or flora / protected areas?		✓
	Yes	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity.(during the implementation of the activity or further to the use of the results, as a possible impact) ?	✓	
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	✓	
Does this activity aim at human cloning for reproductive purposes?		✓
Does this activity intend to modify the genetic heritage of human beings which could make such changes heritable?	✓	
Are the activities intended to be used in military application or aiming to serve military purposes?		✓
Does this activity intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer?		✓
Does this activity lead to the destruction of human embryos (for example, for obtaining stem cells)	✓	
Are there any other ethics issues that should be taken into consideration?	✓	

Declarations

	Yes	No
1) We declare to have the explicit consent of all applicants on their participation and on the content of this proposal.	✓	
2) We confirm that the information contained in this proposal is correct and complete and that none of the project activities have started before the proposal was submitted (unless explicitly authorised in the call conditions).	✓	
3) We declare: - to be fully compliant with the eligibility criteria set out in the call	✓	

- not to be subject to any exclusion grounds under the IRTG Connect-a-thon Financial Regulation 2024/2034 - to have the financial and operational capacity to carry out the proposed project.		
6) We declare that the proposal complies with ethical principles (including the highest standards of research integrity, as well as applicable international and national law, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Appropriate procedures, policies and structures are in place to foster responsible research practices, to prevent questionable research practices and research misconduct, and to handle allegations of breaches of the principles and standards in the Code of Conduct. **False statements** or incorrect information may lead to administrative sanctions under the EU Financial Regulation.	✓	
Other achievements relevant to the call content:		


A-1190 BINGEBERG 4

Many thanks …

To the Schloss Ringberg staff for wonderful service. We are grateful to Kikuë Tachibana for being our Max-Planck sponsor, enabling us to apply to this special venue.

To the CRC 1064 Board for the support and commitment to financing the retreat in a year in which the budget is tighter than usual.

To the Retreat Orga Team, Karl, Kiryl, Viola, Bihter, Emilia, Ana and Prateek. Your ideas and advance preparation laid the groundwork for a great retreat. The IRTG Connect-a-thon was conceived by Emilia and Bihter; the Ringberg Rally and Pub Quiz were put together by Karl, Kiryl and Prateek. Thanks in particular to Ana and Prateek, not only for the retreat organization, but for their continuing contributions as PhD representatives in the IRTG.

And a big Happy Birthday again to Janet and Fotios, whose 30th birthdays – both on March 15! – corresponded this year with our retreat.