Work progress, achievements of:

WP5- Translation and Innovation

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WP5 Tasks

- Task 5.1. **Mapping and cataloguing of current translational research services** and resources available to researchers (Leader: EATRIS)

- Task 5.2 **Educational & best practice exchange workshops** to share with ERNs current support and services available for their translational research needs. Three workshops will be held with the specific focus on the basis of identified needs from within the ERNs (Leader: CCRI)

- Task 5.3 **Educational Webinars**: three educational webinars will be developed and broadcast, giving researchers an overview of the activities related to the subject, as well as the main service and support providers in the European community. (Leader: CCRI)

- Task 5.4 **Innovation expert working group**: an I-EWG will be established, composed of ERNs clinicians and researchers, as well as content experts. The I-EWG remit will be to define a roadmap for a 5-year strategic plan for ERN innovation capacity and sketch principles in the area of contracting, public-private collaboration and intellectual property. (Leader: CCRI)

WP5: Translation and Innovation

Task 5.1. Mapping and cataloguing (EATRIS, CCRI) (M1-M12)

Catalogue of Services

To help the ERN community in understanding the process of translation and to support their collective ability to develop knowledge into patient benefit, a catalogue of current translational research services available to the rare diseases research community has been developed. It was designed to be complementary to the resources and tools collected within the European Joint Programme for Rare Diseases (EJP RD)'s **Innovation Management Toolbox (IMT).**

You can download the static catalogue (Excel document) below or consult it online in the IMT here

Download last version ERICA-Catalogue-of-services 23.01.2024 (, 86 KB)
The catalogue lists various support services provided by national and European organisations and initiatives, ranging from samples, data & databases, technologies & facilities, models & tools to expertise & support.

You can sort the table by selecting one of the categories in the top row. This will help you to find specific information based on service category and/ or country.

Please inform us if you experience any problems with the catalogue (i.e incorrect or outdated information, broken links etc) via info@eatris.eu.

- Updated version of the Catalogue of Services was posted on the ERICA website in January 2024 and in the IMT

Innovation Management Toolbox Features

Advanced browser

Filter the search by categories, tags, and geographical scope

Q&A List

Relevant questions on drug development steps

Use Cases

Short videos created by experts on different drug development topics

ERICA Catalogue

Catalogue of services for the Rare disease research community

Collections

Bookmark and download documents of interest

- https://imt.ejprarediseases.org/

Innovation Management Toolbox (IMT) of EJP RD

- Launched in June 2022
- Library of translational medicine resources on rare diseases. Currently 550 resources.
- Mainly external open access resources addressed by categories: Research and drug development, Regulatory science, Intellectual property, Funding and Project management.
- **Annual Curation process:** Update resources list, Fix broken links, Include new resources (Open to new suggestions)

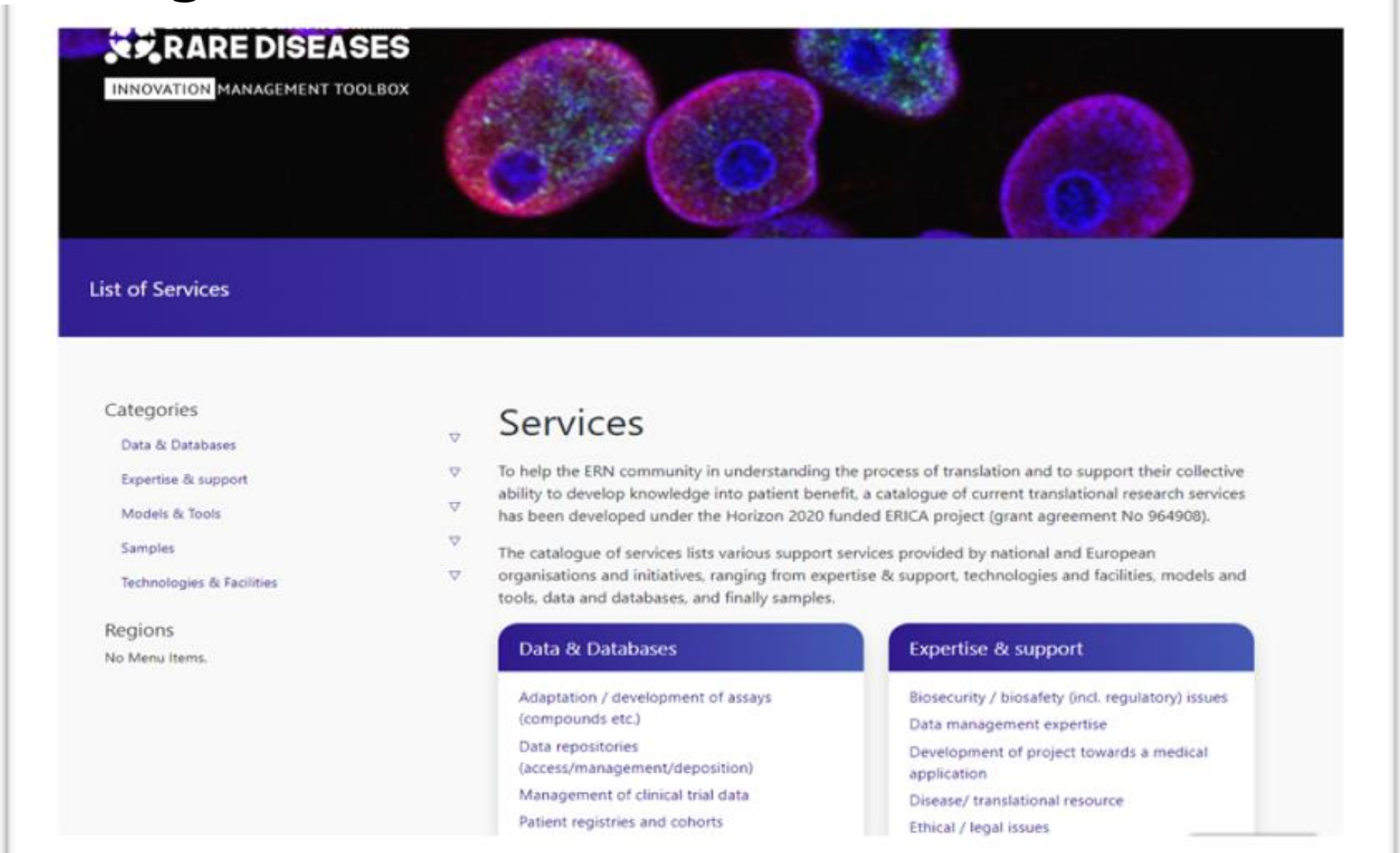
IRDiRC
INTERNATIONAL RARE DISEASES RESEARCH CONSORTIUM
IRDiRC Recognized Resource

	Jan 2024 - List of services to the rare diseases community in Europe		Service URL			
	You can sort the table by selecting one of the categories in the top row. This will help you to find specific information based on service category and/ or country.					
ID	**Services**	**Service Title**		**Service category**	**Service subcategor**	**Researcl**
S35	Next generation sequencing (NGS) and associated technologies are available to researchers in the area of life sciences on the Dresden Campus of DCGC. It provides strong expertise in the areas of: (1) Single cell applications; (2) De novo genome sequencing and assemblies; and (3) A broad range of short read-based sequencing application.	Genome-wide and targeted Next-Generation-Sequencing	https://genomecenter.tu-dresden.de/applications-services	Technologies & Facilities	omics technology platforms/ se	DRESDEN-CON CENTER (DCGC
S36	Services provided by EU-OPENSCREEN include •high-throughput compound/ drug screening (HTS): HTS of an assay against the EU-OPENSCREEN chemical collection (> 100,000 compounds); in silico profiling; hit selection; confirmatory screening; basic counter screening; basic SAR based on screening data; QC of confirmed hits •access to a unique European compound collection: EU-OPENSCREEN chemical collection (> 100,000 compounds)	High Throughput Screening	https://www.eu-openscreen.eu/services/screening.html	Technologies & Facilities	high-throughput screening	EU-OPENSCRE
S37	Services provided by EU-OPENSCREEN include •assay adaption: This assay adaptation process will involve a strong emphasis on quality, including: quality control of reagents; (patho-)physiological relevance; pharmacological consistency; robustness; minimised variability; and tracking of statistical descriptors (e.g. signal to background and the Z' factor) •chemical optimization and profiling of preliminary 'hits' •bioprofiling of donated compounds: All compounds donated by the user which enter the EU-OPENSCREEN ERIC compound collection are characterised and annotated for basic physico-chemical (e.g. identity, solubility, light absorbance and fluorescence) and essential to know biological properties (cytotoxicity, antibiotic, antifungal etc.) by testing in a standard panel of assays. •provision of standardised data: All data generated through QC/bioprofiling and screening activities will be published in EU-OPENSCREEN's open-access database with an optional 'grace' period (i.e.	Bioprofiling assays	https://www.eu-openscreen.eu/services/bioprofili	Data & Databases	adaptation / development of as	EU-OPENSCRE

Functionalities integrated in the IMT

ERICA Catalogue

Catalogue of services for the Rare disease research community



https://imt.ejprarediseases.org/

Functionalities integrated in the IMT

Collections

Integration of new resources with IMT

Orphan drug Guideline ODDG (IRDiRC): Is an interactive tool to guide researchers through the whole process of the rare disease therapies development.

Rare Disease Clinical trial Toolbox (ECRIN): Resources organized in a way to guide and help clinical trialists and R&D managers understand the regulations and requirements for conducting trials. Guideline.

The Advisory Committee for Therapeutics (ACT) toolkit (Newcastle U.) that provides procedural advice and guidance to replicate the successful TREAT-NMD Advisory Committee for Therapeutics (TACT) model in other rare disease communities.

https://imt.ejprarediseases.org/

- **Task 5.2 Educational & best practice exchange workshops**
  - Survey on educational and research needs (EU Survey Tool), December 2021 ✓
  - 3 Innovation Workshops with the specific focus on the identified ERNs needs

1 RP

1st Innovation Workshop: "Success stories sharing" Bologna 22.06.2022 ✓

2nd Innovation Workshop: "Drug repurposing in Rare Diseases" Madrid

2 RP

ERICA Survey on educational and research

- 69 participants
- 16 ERNs
- 21 EU countries

Are there any “low hanging fruits” that bring research focus closer to drug development for your patients? **22**

Are you looking for a preclinical model for your research? **16**

Can you single out research with an interesting mode of action/proof of concept where currently clinical development is still missing? **39**

Can you single out a successful marker research/signal discovery story inside your organization? **34**

Can you already report on a successful drug development story to serve as a model? **20**

“low hanging fruits”

DRUG REPURPOSING
ERN EURACAN
ERN EpiCARE
ERN EuroBloodNet
ERN VASCERN
ERN Skin
Endo ERN
ERN ITHACA

ARTIFICIAL INTELLLIGENCE-BASED ALGORITHMS
ERN EpiCARE

NON-REPLACEMENT THERAPIES
ERN EuroBloodNet

SINGLE-CELL SEQUENCING
ERN PaedCan

GUIDELINES
ERN ITHACA (Phelan-McDermin Syndrome)

Needs

ERICA

European Rare Disease Research Coordination and Support Action

IMPROVED CLINICAL TRIAL STRUCTURE

- ERN Lung
- ERNPaedCAN
- ERN EuroBloodNet

GRANTS

- ERN RITA
- ERN EuroBloodNET
- ERN ITHACA

REGISTRIES

- Endo ERN
- ERN VASCERN

PRECLINICAL MODELS

- ERN Skin

COLABORATION WITH PHARMA

- ENR Skin

COLABORATION WITH TRANSLATIONAL INFRASTRUCTURE

- ERNPaedCan

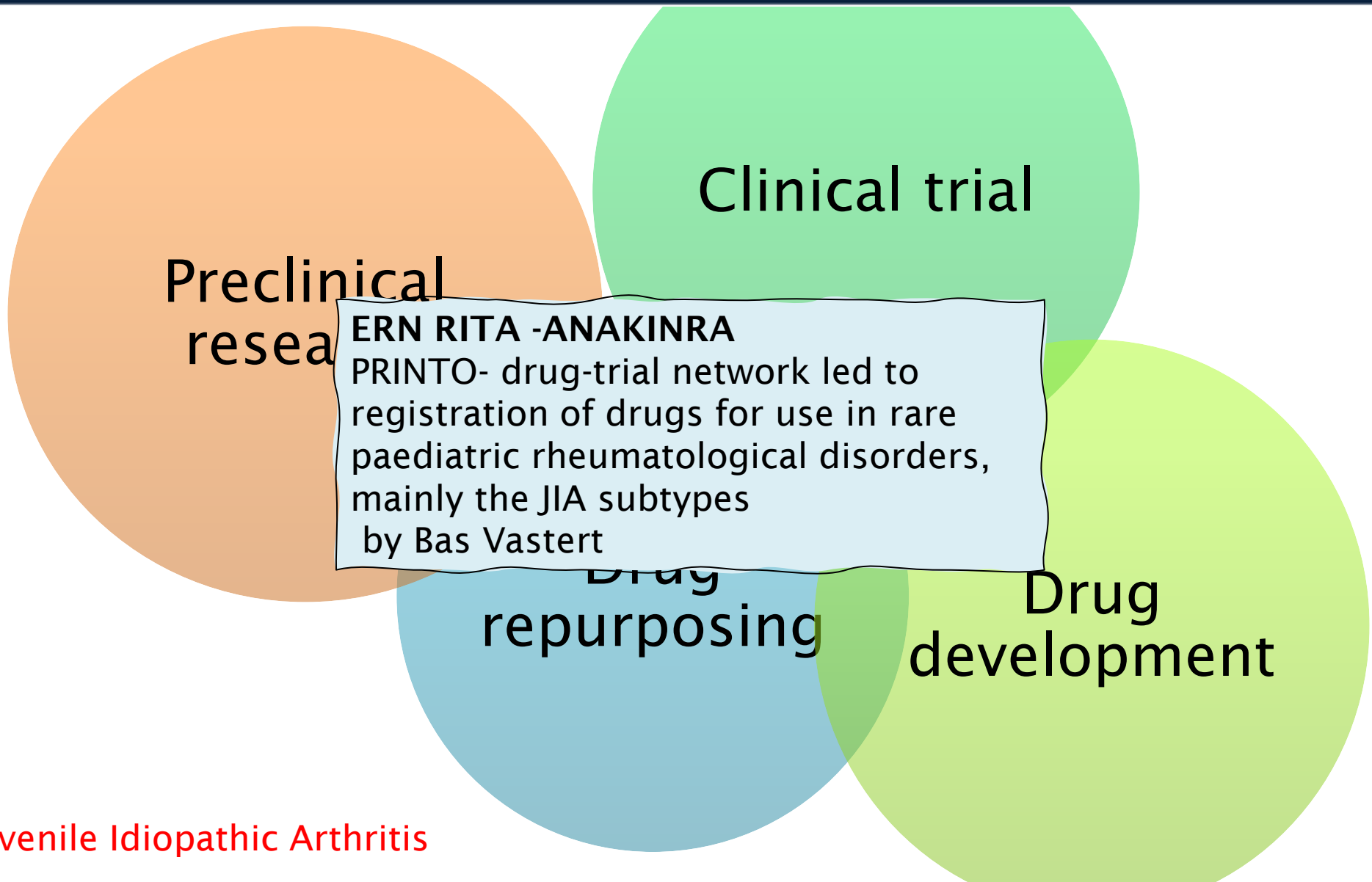
LEGAL IMPUT REQUIRED FOR ETHICAL ACTIONS

- ERN ITHACA

Workshop 1 "Success stories sharing"

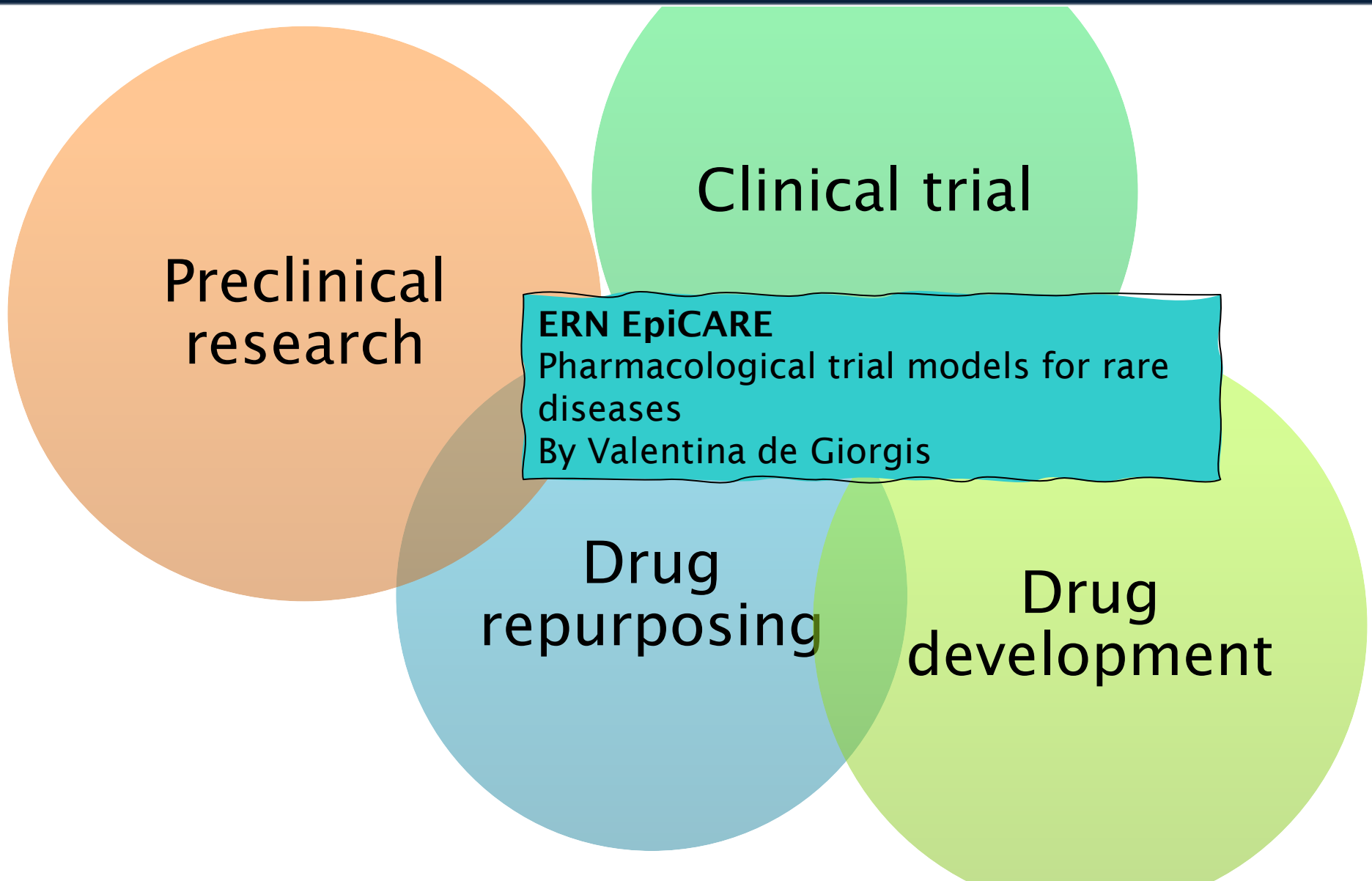
Bologna 2022

Time	Title	Name	ERN
11:00 – 11:05	**Welcome**	Ruth Ladenstein	ERN PaedCan
11:05 – 11:20	**ITCC and ACCELERATE - interest from a rare diseases point of view.**	Gilles Vassal	ERN PaedCan
11:20 – 11:25	Q&A		
11:25 – 11:40	**Drug repurposing anakinra**	Bas Vastert	ERN RITA
11:40 – 11:45	Q&A		
11:45 – 12:00	**Pharmaceutical study with cryptorchidism**	Jørgen Mogens Thorup	ERN eUROGEN
12:00 – 12:05	Q&A		
12:05 – 12:20	**Pharmacological trial models for rare diseases**	Valentina De Giorgis	ERN EpiCare
12:20 – 12:25	Q&A		
12:25 – 12:40	**GWAS identifies *CDH12* as candidate gene for kidney injury in posterior urethral valves**	Loes van der Zanden	ERN eUROGEN
12:40 – 12:45	Q&A		
12:45 – 13:00	**Open discussion**		

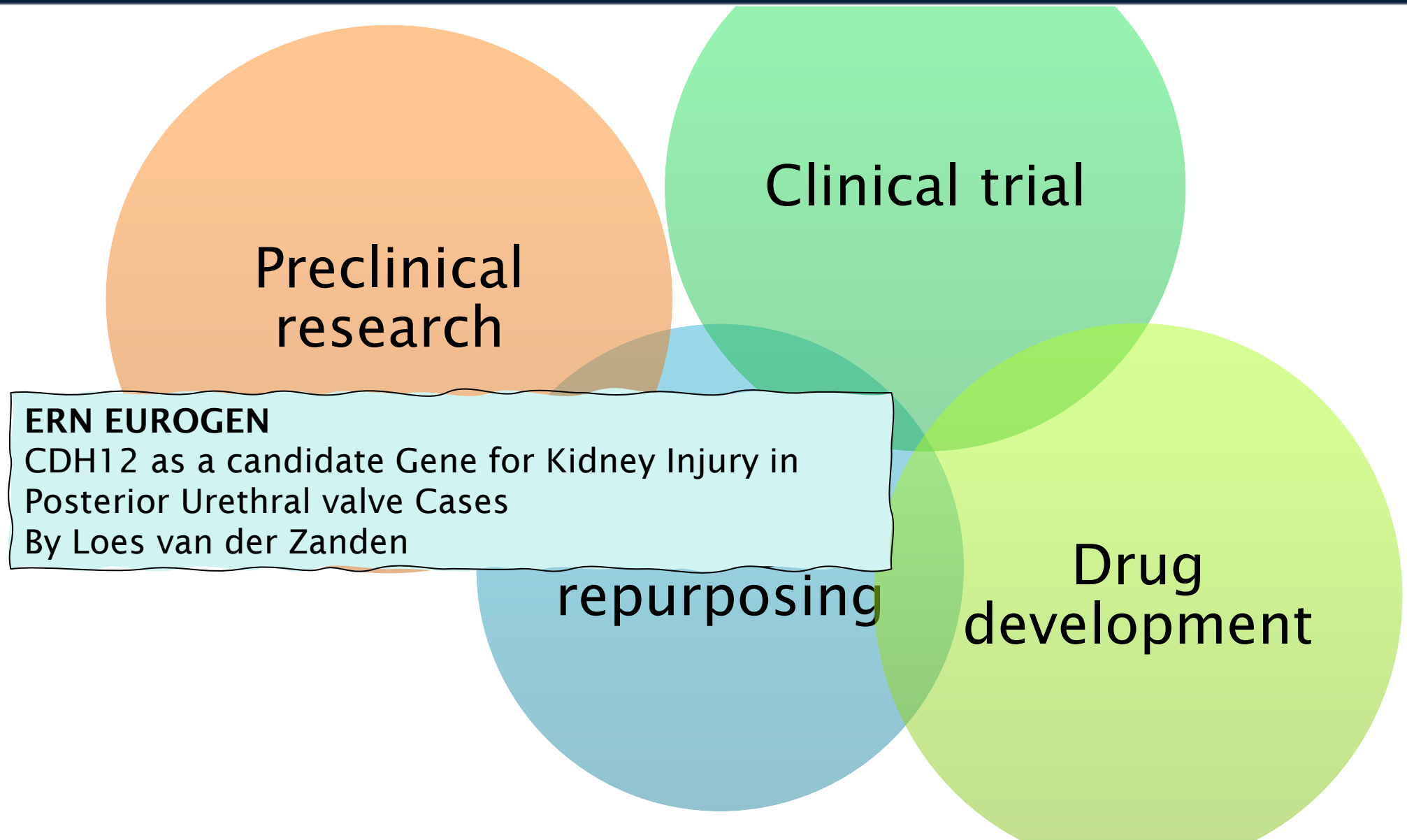


ERN RITA -ANAKINRA
PRINTO- drug-trial network led to registration of drugs for use in rare paediatric rheumatological disorders, mainly the JIA subtypes
by Bas Vastert

*JIA- Juvenile Idiopathic Arthritis



ERN EpiCARE
Pharmacological trial models for rare diseases
By Valentina de Giorgis



ERN EUROGEN
CDH12 as a candidate Gene for Kidney Injury in Posterior Urethral valve Cases
By Loes van der Zanden

Drug repurposing in epilepsy

Nicola Specchio, MD, PhD
Department of Neuroscience
Bambino Gesù Children's Hospital, IRCCS, Rome, Italy

ERN EpiCare

- Patients with drug-resistant epilepsies with developmental and epileptic encephalopathies which require long-life treatment using medicine that should not only act as anti-seizure but also a drug that should be able to modify the underlined neurobiological process of the disease
- Importance of etiology for choosing Anti-seizure medications and targeted therapy
- Repurposing of Fenfluramine and Lorcaserin for a Dravet syndrome/ Fenfluramine has a possible disease modifying role.
- Repurposing rapamycin for TSC-related epilepsy where preventive treatment reduced the risk and severity of epilepsy in infants with TSC (Tuberous sclerosis complex)
- Quinidine for KCNT1- associated epilepsies
- Phenylbutyrate for STXBP1 Encephalopathy and SLC6A1 Neurodevelopmental Disorder
- Research for drug repurposing in epilepsy starts in academia, it can later on be open to collaboration with Industry, but the first steps are performed by academic researchers.
- Off-lable use with inform consent, when a medicine is perscribed for a new condition
- Importance of the **outcome research** as it’s not only about seazure frequency and severyty but also about **symptom control and quality of life** of the patients (feasible PCOMs)

The Mitapivat succes story

Eduard J van Beers, MD, PhD
University Medical Center UMC Utrecht,

ERN EuroBlood Net

- Europe is a declining destination for clinical research, one of the main reasons is contracting time (legal issues). One of the solutions would be harmonization. Example French mandatory CTA substantially decreased the contracting times.
- Collaboration with pharma company AGIOS for several CTs that led to drug approvals for RDs. Often the first clinical data are available at the company website, even before the abstract is submitted.
- Importance of EuroBloodNet CRO APHP team in supporting the PI in designing of a clinical trial and other related tasks to speed up the process.
- Take home message:
  - Commercial partner should have funding for clinical trials and regulatory submission
  - There should be a “business case” *(not always $$$)* for all stakeholders
  - Build registries *(if needed pre-invest)*
  - **Establish a team in the ERN that can act as academic CROs such as the APHP team in Eurobloodnet.**
  - Use ERN as a brand and collaborate
- Company is outsourcing the development, there should be a contract for licensing the data between the academia and the industry prior to market authorization.

Pathways in Drug Repurposing

Donald Lo, Director of Medicines Development at EATRIS

REMEDi4ALL The European Platform for Medicines Repurposing

- The only way to tackle the large number of RD is by drug repurposing
- How to pick a project, by unmet need, excitement of a mechanism?
- Project life-cycle management! Simultaneously testing drugs for more than one indication.
- The ERNs that have a clinical trial framework are invited to connect with the REMEDi4ALL.

- **Task 5.3 Educational Webinars**
  - 3 Educational Webinars

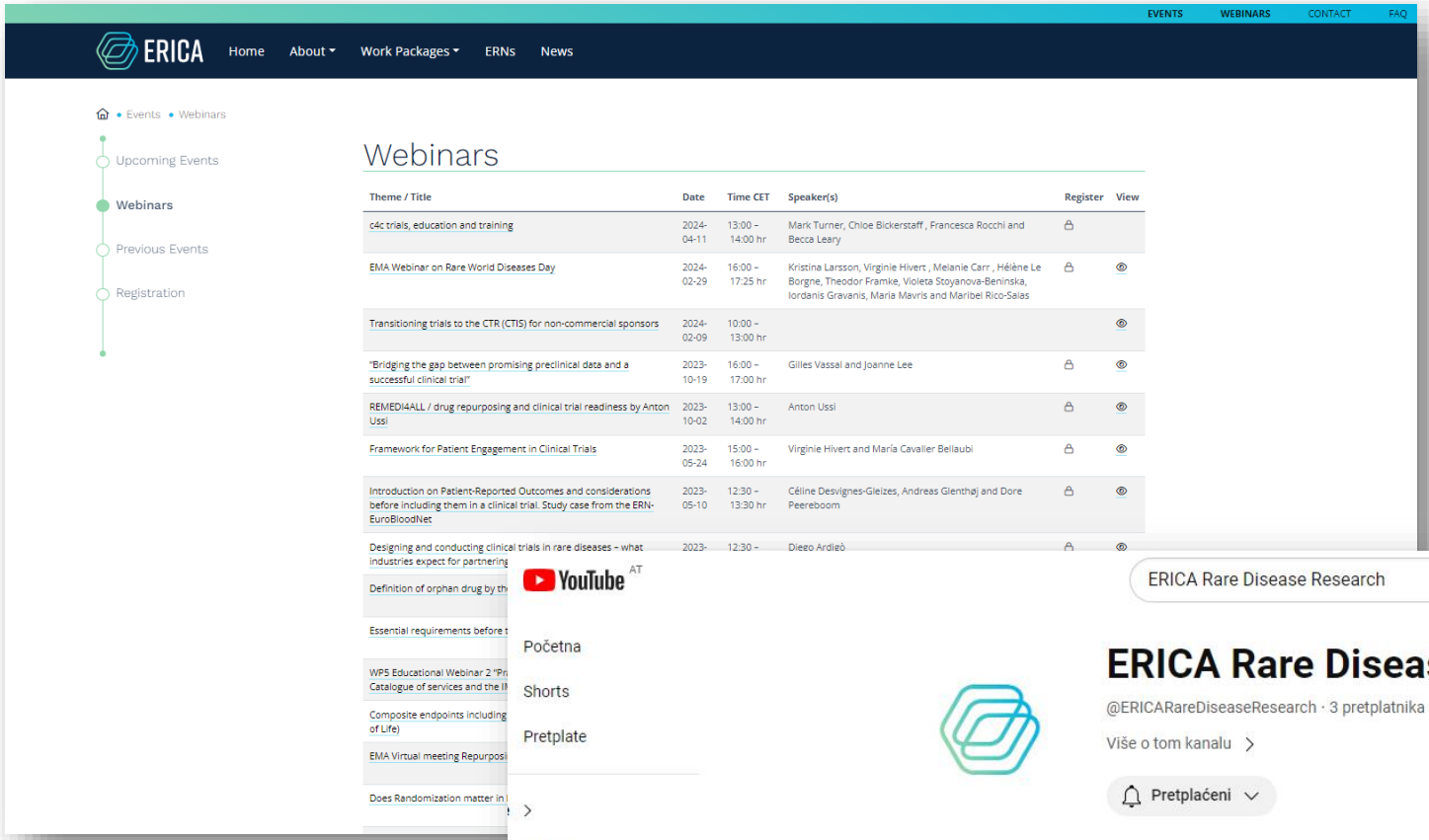
Educational Webinar 1 "Current research services available for the rare disease community" Anton Ussi, November 8th 2021. ✓

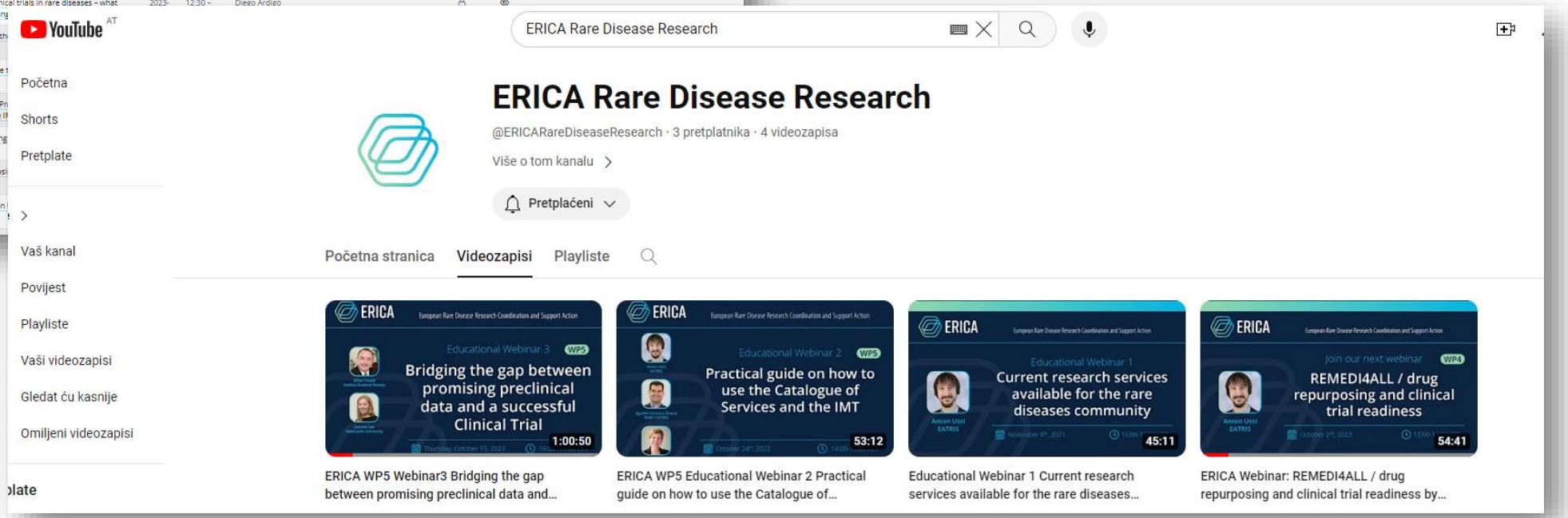
1 RP

Educational Webinar 2 "How to use the Catalogue of Services and the Innovation Management Toolbox" Agustin Arasanz Duque, Anton Ussi, Rosan Kreeftmeijer-Vegter, October 24th 2022. ✓

Educational Webinar 3 "Bridging the gap between promising preclinical data and a successful Clinical Trials" Gilles Vassal and Joanne Lee, October 18th 2023 ✓

2 RP





- Webinars are posted on ERICA website and dedicated ERICA Rare Diseases Research YouTube channel

Task 5.4 Innovation expert working group

Innovation Expert Working Group (IEWG)

WP5 aims to support the process of translating the discoveries made in the clinic and laboratory into new diagnostic and therapeutic interventions for rare diseases. This process is highly complex, costly and time-consuming, with high failure rates. Successful translation requires both interdisciplinary and inter-sectoral collaboration, as well as access to cutting edge analytical technologies, preclinical models and assays, and bio-samples and data. In light of foregoing, WP5 has as its objective to support the ERNs' collective ability to develop knowledge into patient benefit by setting up an Innovation Expert Working Group.

Task 5.4 Innovation expert working group

Increase the research and innovation potential of ERNs

Create	Create a platform that integrates all ERNs research and innovation capacity
Map, integrate and link	Map, integrate and link ongoing activities
Establish	Collaborative ties with existing RD infrastructures and consortia
Promote	Promote inter-ERN research activities
Stimulate	Stimulate clinical research activities
Encourage	Encourage methodology sharing

Establishment of I-EWG composed of ERNs clinicians and researchers To create an innovation roadmap and strategic plan

- Through mapping of educational and research needs amongst ERNs
- Organization of educational webinars and innovation workshops.

I-EWG established, composed of ERNs clinicians, researchers and patient representatives ✓

1ST Meeting, February 2022

2nd Meeting, March 2023

3rd Meeting F2F in Madrid, July 2023

Innovation Challenges & Opportunities - Outputs of the 1st IEWG - with remarks from the 2nd meeting

Problem statement	Possible solution	Strategic plan
Insufficient funding	Explore funding opportunities	Knowledge sharing on available funding opportunities. Is there a need for an ALARM function on open calls of interest for the ERNs?
Data sharing, methodology sharing, accessibility, registries.	Connection with WP2- Data Collection, Integration and Sharing	Using ERICA as a platform to create ERNs operational network
Lack of knowledge of available resources	Connect ERNs to the available infrastructure, services, and tools for the RD community Share knowledge about infrastructure and successful projects	Catalogue of Services / Research infrastructures IMT from EJP RD delivered Use services provided by EMA (Scientific advice for projects)
Legislation	Legal advisory group on EU level (interaction with DG Justice) Legal working group from ERNs	Sharing the insights on the new pharmaceutical directive and regulation (April 2023)
Collaboration with industry	Promotion of project ideas towards industry and followed by joint discussion (collaborative ERICA forum) between industry and academia (learnings from ACCELERATE)	ERICA Advisory Board to promote collaboration with industry sector Official statement that ERNs are allowed and need to collaborate with the industry when it comes down to drug development needed.
Clinical trials in RD	Innovative trial design considering small patient number as well as basket trials embracing more than one industrial partner to address different mode of actions	Best practice sharing based on outputs of ERICA and EJP RD (workshops and webinars WP4/WP20) New workstream on CT in RD Partnership
Drug development from scratch is a long process	Repurposing of drugs is an opportunity to accelerate drug development	Workshop on Drug repurposing in RD/ Share knowledge and learnings from ERNs and trough collaborations with projects focused on drug repurposing such as REMEDI4ALL
Preclinical models	Connect ERNs to the available infrastructure and services	Use developed tools such as IMT that covers this topic Best practice sharing (workshops and webinars)

- *To improve the quality of life of people of any age affected by a rare disease which may be life-threating, disabling or require special supportive care measures by developing additional innovation and making it accessible to all patients in Europe*
- *To improve access to drugs (and drug candidates) and medical devices in the (highest) unmet medical needs across the spectrum of rare diseases through augmentation and integration of the ERN research and innovation capacity*

WP5 Deliverables

- D5.1 (D24) Catalogue of services (M6) ✓
- D5.2 (D25) Innovation roadmap and strategic plan (M12) ✓
- D5.3 (D26) Innovation workshops report n=3 (M48) IN PROGRESS

WP5 Milestones

- MS4 First webinar online (M10) ✓
- MS6 Second webinar online (M20) ✓
- MS9 Third webinar online (M30) ✓