More than 400 million people worldwide have a rare disease.

- 70-80% are children.
- 80% of rare diseases are of genetic origin.
- 6,000 – 8,000 diseases are classified as rare.
- ~80% considered ultra-rare.
- ~60% are serious and disabling.
- ~50% are life threatening.
- 500 drugs have reached the market.
- 5% of rare diseases have an approved treatment.
- 700-800 treatments in development.

Tremendous Unmet Medical Need

IRDiRC’s GOAL

1000 new rare disease treatments by 2027

At the current rate of drug development (40-50 new therapies developed per year), it would take 500 years to get a treatment for all these conditions! Therefore a quantum change of the present drug development model and ecosystem for rare diseases is needed.

Orphan Drug Development Guidebook

A patient focused guidebook that describes the available tools, incentives, resources and practices for developing traditional and innovative drugs/therapies for rare diseases and how to best use them. It can be used by academic, non-profit organizations, small and larger (innovative) biotechs and patient-driven drug developers.
ODDG – PROJECT AT-A-GLANCE

- 1 Workshop with 27 drug development experts and stakeholders
- 1 milestone-based drug development framework
- 116 Building Blocks (BBs)
- 3 Case Scenarios
- Use of building blocks across the different phases and milestones of drug development
- Roadmap Check-lists of “what to do” and “when to do it”
ODDG- FRAMEWORK

Patient's NEED

- Disease knowledge
- Target
- Product discovery
- Nondclinical PoP
- FIH ready
- Human PoC
- Pivotal data
- MAA NDA/BLA
- Market Access
- Patient care

Traditional regulatory activities

- EMA-SA
- PMDA - consultations
- Pre-IND
- FDA End of Phase II meeting
- PIP

- EMA Pre-submission meeting
- FDA End of Phase III meeting
- FDA Pre-NDA/BLA

8
ODDG – Building Blocks (BBs) Classification

For each BB it was created a factsheet describing its relevance to rare disease drug development, availability, scope of use, output, pros and cons of usage, best time to apply, duration and costs.

110 BBs were identified consisting of:

- **Regulatory** - pathways, designations and incentives for ODD in EU, US and Japan
- **HTA and reimbursement** - practices and procedures to support the economic value proposition and assessment, mainly focused on EU
- **Early access** - programs to enable patient treatment before regulatory license or local approval, either reimbursed or provided at no cost, according to the local regulation and practices
- **Development practices** - best-practice established by developers in the field of rare diseases, to improve orphan drug development in terms of speed, quality or efficiency
- **Development resources** - physical or practical existing accessible resource, to support drug developers in the orphan space
ODDG – Case Studies

- **Standard Orphan Drug**
  - Traditional, well-understood pharmaceutical (small molecule or a protein)
  - Available considerable body of knowledge around the disease in the regulatory and medical community
  - Patient population sufficiently understood and nonclinical development possible
  - Disease present in children and adults

- **Advanced Therapy**
  - Development of novel platforms: Gene Therapy, Stem Cell Therapy, and Gene Editing
  - Available considerable body of knowledge around the disease in the regulatory and medical community
  - Patient population sufficiently understood and nonclinical development possible
  - Disease present in children and adults

- **Disregarded Disease**
  - Prevalence is <1 per-million inhabitants
  - Few knowledge on the disease
  - Natural history of the disease is little known; no severity or prognostic phenotypes have been identified so far
  - The disease exists only in pediatric patients
  - No biomarkers or clinically-relevant endpoints
ODDG —
HOW DO YOU START THE DEVELOPMENT OF YOUR PRODUCT?

S
Takeholders mapping
T
Available information on the disease
A
Financial Resources
R
Target Patient Value Profile
STAKEHOLDERS MAPPING
- Are there patient organizations?
- Are there community advisory boards?
  - CAB’s
- Are there stakeholder networks?
  - ERNs
  - CRNs
  - AMED-IRUD
- Are there general development support platforms and infrastructures?
  - c4c
  - EJP
  - Development Landscape analysis/ Horizon Scanning

AVAILABLE INFORMATION ON THE DISEASE
- Natural History Studies
- Diagnostic Tools
- PCOMs
- Biomarkers
- Coding of Rare Diseases

FINANCIAL RESOURCES
- Public Funding
- Private Funding

TARGET PATIENT VALUE PROFILE

KEY TAKE AWAYS:
- Missing info on the disease need to be generated ASAP
- If not pre-existing, a solid stakeholder network has to be created
- Stakeholder engagement is a constant activity throughout development
ODDG – START CHECKLIST
Regulatory advice is essential and should be requested as early as possible.

REGARDLESS YOUR STARTING PHASE OF DEVELOPMENT IT IS CRUCIAL THAT YOU BEGIN WITH START TO ASSESS THE LEVEL OF UNDERSTANDING OF THE DISEASE.

STARTS WITH PATIENT’S NEED RATHER THAN IDEA

REGULATORY ADVICE IS ESSENTIAL AND SHOULD BE REQUESTED AS EARLY AS POSSIBLE.

CONSIDER EARLY ON A STRATEGY TO APPLY FOR REGULATORY ACCELERATION PROGRAMS

KEEP IN MIND AN EARLY INTERACTION WITH HTA OR PAYERS IS IMPORTANT

TARGET

PRODUCT DISCOVERY

Nonclinical PoP

FIH ready

Human PoC

Pivotal data

MAA / NDA / BLA

Market Access

Patient care

Patient’s NEED

Disease knowledge

START

Patient’s NEED RATHER THAN PATIENT CARE