4th Neuromuscular Translational School

Under auspices of EURO-NMD and TREAT-NMD

November 21-25 2022

Leiden University Medical Center, the Netherlands

Programme committee:

Annemieke Aartsma-Rus	(Leiden University Medical Center, LUMC, the Netherlands & John Walton Muscular Dystrophy Research Center, Newcastle University, UK)
Teresinha Evangelista	(Institut de Myologie, Groupe Hospitalier Pitié-Salpêtrière, Paris, France)
Silvere van der Maarel	(Leiden University Medical Center, LUMC, the Netherlands)
Andoni Urtizberea	(Institut de Myologie, Paris, France)

Target audience:

- MDs
- PhD/Postdoc researchers
- Others working in translational research
- Preferably in the NMD field, but in either case working in the RD field
- Aim for 16 participants (definitely no more than 20 – or we lose the interactivity)
- Industry delegates

Aim:

- Facilitate the clinical development of therapies for NMDs

Objectives:

- Educate clinicians and researchers working in the NMD field on aspects relevant for translational therapy development:
    - Bench to bedside research
    - Regulatory system
    - Clinical trials
    - Outcome measures
    - Patient communication
    - Registries and biobanks
    - Biomarkers and -omics
- Outline and showcase how networks like EURO-NMD and TREAT-NMD facilitate therapy development
    - Standards of care
    - Clinical trial tools
    - Outcome measure development
    - Interaction with stakeholders

4th Neuromuscular Translational School – Leiden 2022

Monday November 21st

12.00 – 13.00	**Registration and Lunch**
Session 1	**Introduction** **Introduction to TREAT-NMD and EURO-NMD** (A. Aartsma-Rus and T. Evangelista) **Overview of bench to bedside research** (A. Aartsma-Rus) **Overview of current state of the art of NMD management** (A. Urtizberea)
13.00 – 13.30	**Welcome and introduction** (T. Evangelista, A. Urtizberea & A. Aartsma-Rus and Silvere Van der Maarel) ***Objective:*** *Introduction of participants and organizers; layout of the program and learning objectives*
13.30 – 14.30	**Introduction to TREAT-NMD and EURO-NMD** (A. Aartsma-Rus and T. Evangelista) ***Objective:*** *Introducing the problematic of RD and introduce the networks (the goals, achievements and partners etc.; two 20' talks, 20' discussion)*
14.30 – 15.00	**Overview of bench to bedside research** (A. Aartsma-Rus) ***Objective:*** *to outline the different steps of therapy development from idea, to proof of concept studies in model systems, to preclinical optimization studies, clinical trials, drug approval and post marketing surveillance studies (20' talk, 10' discussion)*
15.00 – 15.30	**Tea/coffee break**
15.30 – 16.30	**Overview of current state of the art of NMD management** (A. Urtizberea) ***Objective:*** *give participants a global overview of the different groups of NMDs (genetic and acquired) and the current care and management practices (45' talk, 15' discussion)*

Session 2:	**Preclinical Research** **Tools of the trade for preclinical research** (A. Aartsma-Rus) **Introduction to TACT mock up session** (A. Aartsma-Rus)
16.30 – 17.20	**Tools of the trade for preclinical research** (A. Aartsma-Rus) ***Objective:*** *outline different models used in preclinical research, their opportunities and limitations, and the need for standardized tests and the TREAT-NMD advisory committee for therapeutics (TACT) (30' talk, 20' discussion)*
17.20 – 17.35	**Introduction to TACT mock up session** (A. Aartsma-Rus)
17.35	**End of day – Q&A WITH DRINKS and nibbles; MEET THE SPEAKERS**

Tuesday November 22nd

08.30 – 09.30	**Self-study for TACT mock review session** **When to move to a clinical trial? TACT mock review session** (moderated by A. Aartsma-Rus with active involvement of Teresinha Evangelista)
09.30 –11.00	**When to move to a clinical trial? TACT mock review session** (moderated by A. Aartsma-Rus with active involvement of Teresinha Evangelista) ***Objective:*** *learning to have a critical look at preclinical research. In this mock session, participants will have been provided with a fictitious TACT application from a company planning a clinical trial in the NMD space. Participants will be split into groups to discuss the strengths and limitations and outstanding questions of the application.*
11.00 –11.30	**Coffee**
Session 3	**Clinical research** **Introduction to clinical trials** (M. Guglieri) **Ethical discussion role play** (moderated by Annemieke Aartsma-Rus) **How the regulatory system works** (Violeta Stoyanova-Benninska) **Industry perspective on drug development for rare diseases** (Eric Van Der Veer) **Clinical trial practicality forum** (T. Evangelista and T.Gomes)

11.30 – 12.30	**Introduction to clinical trials** (M. Guglieri) ***Objective:*** *introduce how and why clinical trials are conducted, the objective of different trial phases, trial design, primary endpoints, secondary endpoints, clinical significance, ethical concerns and informed consent; 45' talk, 15' discussion*
12.30 – 13.30	**Lunch**
13.30 – 14.30	**Ethical discussion role play** (moderated by Annemieke Aartsma-Rus, with active participation of the organisers and Pietro Spitali) *Participant will be provided with a scenario for a clinical trial plan for a drug to be tested in children. Different roles will be given to different participants.* ***Objective:*** *gain insight in ethical discussions related to clinical trials and the perspectives of different stakeholders. Reading of provided material ~5'; discussion ~40', evaluation (leaving roles behind) ~15'*
14.30–15.30	**How the regulatory system works** (Violeta Stoyanova-Benninska) ***Objective:*** *explain the centralized system, how it is organized and how regulators decide whether drugs are eligible for marketing authorization, outline patient involvement in committees – focus on rare diseases (30' talk, 30' discussion time)*
15.30 –16.00	**Coffee break**
16.00 –17.00	**Industry perspective on drug development for rare diseases** (Eric Van Der Veer) ***Objective****: provide the perspective of pharmaceutical companies on drug development for rare diseases, which challenges do they face, how do they deal with them; 40' talk, 20' discussion time*
17.00 – 18.00	**Clinical trial practicality forum** (T. Evangelista and T. Gomes) ***Objective:*** *provide insight in the logistics of running a clinical trial (recruitment, treating, dealing with patient expectations, informed consent etc.)*
18.00	**End of day – Q&A WITH DRINKS; MEET THE SPEAKERS**

Faculty Dinner

Wednesday November 23rd

Session 4	**Showcase: validation of MRI as a biomarker in clinical trials** (Hermien Kan) **Biomarkers** (Pietro Spitali) **ERICA/EJPRD tools to facilitate clinical trials** (TBA) **Showcase on outcome measure development (PULL)** (Anna Mayhew) **Outcome measures** (Jean Yves Hogrel)
09.00 – 10.00	**Showcase: validation of MRI as a biomarker in clinical trials** (Hermien Kan) ***Objective:*** *introduce MRI as an outcome measure in trials, ongoing efforts to validate this biomarker for assessment of muscle quality in neuromuscular diseases, 45 minute talk, 15 minute discussion*
10:00 – 10.30	**Coffee break**
10.30 – 11.30	**Biomarkers** (Pietro Spitali) ***Objective:*** *explain the different types of biomarkers, how they can be used in trial planning and as outcome measures, the regulatory perspective on biomarkers, highlighting ongoing networking efforts (45' talk, 15' discussion)*
11:30 – 12.30	**ERICA/EJPRD tools to facilitate clinical trials** (TBA) ***Objective:*** *to gain insight in available tools and services for planning and conducting clinical trials* *~ 20 minutes (standards of care, networking, interaction with regulators,)* *~25 minutes (patient registries and CTSR)* *Discussion ~15 minutes*
12.30 – 13.30	**Lunch**
13.30 – 14.30	**Showcase on outcome measure development (PULL)** (Anna Mayhew) ***Objective****: to outline the steps and stakeholders involved in developing and validating a functional outcome measure (select one – indicate the same applies for all); 45' talk, 15' discussion*

14.30 – 16.00	**Outcome measures** (Jean Yves Hogrel) ***Objective:*** *outline of requirements of outcome measures used in clinical trials, how to select the best outcome measure for a pivotal trial; using real life examples of successful and failed trials (e.g. drisapersen 6MWT) 60' talk, 30' discussion)*
16.00 – 16.30	**Coffee Break**
16.30 – 17.30	**Showcase: PROM development** (Nathalie Goemans) *Objective: explain what is involved in developing a patient reported outcome measure using the DMD PROM development as a showcase, 45' talk, 10' discussion*

November 24 Thursday

Session 6	**Patient engagement and Post Marketing**
09.00 – 10.30	**How patients can help your research from bench to bedside** (Elizabeth Vroom) ***Objective:*** *Examples are given of how patients can be involved in helping with all steps of therapy development, to underline that patients or not only study objects, but also active participants*
10.30 – 11.00	**Coffee break**
11.00 – 12.30	**Translating science to the non-initiated** (Ronald Veldhuizen) ***Objective:*** *Participants will gain insight in how to clearly explain science to people without a scientific background – with a focus on patients where the added challenge is not to overpromise or raise false expectations; 60' lecture, 30' discussion*
12.30 – 13.30	**Lunch**
13.30 – 15.00	**Translating science to inform patients (BLOG)**
	Objective: *participants are asked to bring a scientific publication on a potential therapy of their choice. They will now have to summarize this into a 500-word blog understandable by patients and their families*

15.00 – 16.30	**Presenting science to patients** ***Objective:*** *participants are split in groups of 4 and will be provided with a scientific paper. It is their task to generate a presentation (~10-15 minutes) to inform patients of the scientific findings in a clear and objective manner*
16.30 – 18.00	Presentations from each of the groups (facilitated by Annemieke Aartsma-Rus) ***Objective:*** *each of the groups presents their presentation, the other participants are the audience and listen as if they were a patient*
19.00	**Network dinner**

Friday November 25

09.00 – 10.30	**Participants work on preparing their final presentation**
10.30 – 12.00	**Participant presentations** (Chaired by Silvere Van der Maarel) We ask groups of 4 participants to prepare a 10-15' talk - Who they are and what they expected from the summer school - The things they learnt - How this will influence their daily work - What we should keep in future summer schools - What we should drop/improve - What they were missing
12.00 – 12.30	Feedback and general discussion (Chaired by Silvere Van der Maarel)
12.30	**Lunch and departure**