

# Solve-RD Publication Policy

<b>Version</b>	V3.1	
<b>Date / History of changes</b>	5 July 2024 (V3.1)	V3.1: Update Annex I (Solve-RD author lists)
	8 November 2023 (V3)	V3: Addition of sections 1-3, update section 4 and 8
	16 February 2022 (V2.2)	V2.2: Update Annex I (Solve-RD author list)
	18 December 2020 (V2.1)	V2.1: Update Annex I (Solve-RD author list)
	18 April 2018 (V2)	
<b>Authors</b>	Holm Graessner, Tina Harmuth, Birte Zurek, Kornelia Ellwanger	
<b>Approved by GA</b>	05.02.2024 (V3)	

## 1 Solve-RD Publication Board

Solve-RD established a Publication Board. The Publication Board is chaired by Holm Graessner and engages all WP leads and is open for interested DITF and WG leads to join. The Publication Board shall strategically plan publications and shall ensure transparent communication about planned Solve-RD publications. The Publication Board shall also provide advice on authorship discussions.

## 2 Solve-RD publication tiers

The Publication Board defined **three tiers of Solve-RD publications** in terms of scope and coordination requirements. The three-tier model has been approved by the Solve-RD Steering Committee on 16 Feb 2021.

### Tier 1 “flagship” publications

- Require input from the entire Solve-RD consortium and central coordination
- ERN/DITF and/or WP-level (or even cross WP) coordination/lead required
- Example: massive re-analysis of all existing WES/WGS data

### Tier 2 „central“ Solve-RD publications

- Requires coordination within ERN/DITF or DITF/WG
- Example: individual manuscript of re-analysis effort of a WG; or individual ERN yield/new phenotype/new gene(s)

### Tier 3 „local“ Solve-RD publications

- Individual solved cases/disease
- Case reports

## 3 Solve-RD fairness principles to determine authorship

The Publication Board defined the following **principles to determine authorship**:

### (1) Authorship reflects (scientific) contribution

- Infrastructure and support roles (such as clinicians contributing cases or infrastructure enabling joint analysis) will be taken into consideration, too.
- (Governance) role in the project should not define authorship (position).

### (2) Fair and justified designation of authors

- Designation of authors will be based on submitted analysis projects and in line with the Solve-RD Publication Policy.
- Prominent authors shall take responsibility for the manuscript.
- Both “fairness towards the consortium” and “fairness towards individuals” will be taken into account, however, individual contribution has to be appreciated foremost.

**Proposed process to determine authorship (for tier 1 publications):**

- Manuscript leads propose authorship positions based on contribution taking into account the Solve-RDs fairness principles.
- All authors and contributing Solve-RD sub-structures (DATF-WGs, DITFs, etc.) are being informed and explicit agreement is requested.
- Proposal of authorship positions is being run by the Publication Board. Only in case of serious issues the SC is being involved. Sub-structures (e.g. DITF) propose and harmonise respective authorship rules.

**4 'Solve-RD consortium' as an author and additional Solve-RD corporate authorship lists**

An affiliation list has been created and is regularly being updated containing all members of the Solve-RD consortium and associated partners (see Annex I). This list determines the Solve-RD author ('Solve-RD consortium'). Additional authorship lists of Solve-RD subgroups (i.e. for ERN-specific Data Interpretation Task Forces (DITF)) have been created and contain all Solve-RD partners contributing to the respective subgroup.

The 'Solve-RD consortium' author list and all additional Solve-RD corporate authorship lists are administered and regularly updated by the project management team (lead: Holm Graessner).

'Solve-RD consortium' as an author shall be used for all publications that require input from the entire Solve-RD consortium (Tier 1).

Other Solve-RD corporate authorship lists will be used for publications that cover the work or contributions from the respective groups.

For all publications including 'Solve-RD consortium' or Solve-RD corporate authorship lists as an author, the responsible authors shall contact the project management office. The management office provides the most recent version of the respective list, provides advice for the use and support for appropriate formatting of the authorship lists considering the requirements of the respective journal and publisher. The management office is responsible to inform all list authors about the planned publication that makes use of the corporate author list.

**5 Notification and authorship policy with regard to shared data**

All Solve-RD publications are acknowledged to be based on the fundamental principles of open scientific collaboration, reciprocity, attribution and benefit sharing. For any publication resulting from work carried out using data shared or generated through Solve-RD (e.g. for identifying a novel gene), including where data has been accessed through the RD-Connect Genome-Phenome Analysis Platform, the authors should in all cases acknowledge and give appropriate authorship positions to all relevant parties in line with best practice for acknowledgement of scientific contribution including submission of the primary data.

Examples and further principles are described below.

- 1. A publication arising from research in which the party leading the publication ("the PI team") is primarily analysing their own submitted data (example: novel gene discovery by a submitter analysing their own patient cohorts in the RD-Connect GPAP):**
  - i. Where a publication only includes data and hypotheses from the PI's own research group, key authorship positions may be held by this group, but the software, tools and resources made use of for the research should be duly acknowledged and referenced in line with the policies for those resources (e.g. see RD-Connect GPAP policy below). Where justified,

individuals supporting the bioinformatics analysis or platforms may be approached for co-authorship based on individual scientific contribution.

- ii. Where a publication has involved the use or analysis of data from additional submitters, these submitters should be contacted as soon as possible ahead of publication and invited to provide input as co-authors. The PI team is strongly encouraged to share key authorship positions with other teams that have brought in similar intellectual input and/or fundamental data (e.g. "a second family"). Acknowledgement of bioinformatics support should also be considered as in (a) above.
- 2. A publication arising from the analysis of data where the party generating the hypothesis and carrying out the analysis is not themselves the data submitter (example: reanalysis of data by a Solve-RD bioinformatics group that did not submit the data or see the patients):**
- i. Submitters of the data used for the analysis should be contacted as soon as possible ahead of publication and invited to provide input as co-authors. The PI team is strongly encouraged to share key authorship positions with the submitting teams based on the value and amount of data contributed to the publication. If the primary data is the key to discovery, a key authorship position should be discussed with the owner of the primary data.
  - ii. Where a publication makes use of data from a large number of submitters or transversal analysis of the Solve-RD cohort, a group authorship for Solve-RD should be considered in order to acknowledge the role of all data submitters equally.

All data access through the RD-Connect genome-phenome analysis platform is monitored automatically by the system and all other data access for other Solve-RD activities is only to named individuals within the Solve-RD consortium, therefore any breach of the publication policy will be monitored and flagged up to the Solve-RD Steering Committee.

## 6 Confirmation of paper by Solve-RD Consortium

During the project and for a period of one (1) year after the project, every paper that is published with affiliation of Solve-RD or includes data produced or collated within Solve-RD has to be confirmed by the Solve-RD Consortium. The procedure is defined in Article 29.1 of the Solve-RD Grant Agreement and Article 8.4.2 of the Solve-RD Consortium Agreement. All Parties and associated partners (including associated ERNs) are obliged to follow this procedure:

Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the intended date of publication. Any objection to the planned publication following the above notification shall be made in accordance with the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within thirty (30) calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

An objection is justified if (a) the protection of the objecting Party's Results or Background would be adversely affected and/or (b) the objecting Party's legitimate academic or commercial interests in relation to the Results or Background would be significantly harmed.

The objection has to include a precise and reasonable request for necessary modifications, it being specified that any such modifications shall not harm the scientific content of the proposed publication or communication.

If an objection has been raised the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion. The objecting Party can request a publication delay of not more than 90 calendar days from date of submission to the other

Parties. After 90 calendar days the publication is permitted provided that Confidential Information of the objecting Party has been removed from the Publication and all reasonable modifications of the objecting Party have been implemented within the Publication as indicated by the objecting Party.

A decision has to be made and communicated within four weeks after submission of the publication draft (author list and abstract) to the Steering Committee.

## 7 Parallel Analysis of submitted data at centres

The Publication Board has to be informed if data sets that were submitted to Solve-RD for central analysis lead to publications based on separate (in-house) analysis.

## 8 Acknowledgements

### Solve-RD funding acknowledgement

Any publications arising from Solve-RD project funding must be published Open Access and acknowledge EU funding in the following way:

“This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 779257 (Solve-RD).”

### RD-Connect GPAP acknowledgement

Authors should acknowledge the RD-Connect GPAP if tools, services or data provided by the platform have enabled or have contributed to research targeted for scientific publication.

RD-Connect GPAP should be acknowledged using the following wording:

“This study makes use of data and tools shared/provided through the RD-Connect GPAP, which received funding originally from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement No. 305444.”

In addition, the following paper should be cited:

Laurie S., Piscia D., Matalonga L., Corvo A., Garcia C., et al. The RD-Connect Genome-Phenome Analysis Platform: Accelerating diagnosis, research, and gene discovery for rare diseases. *Human Mutation* 2022 febr. 17. doi: <https://doi.org/10.1002/humu.24353>

Where appropriate, the RD-Connect GPAP should also be explicitly mentioned in the “Materials and methods” and/or “Results” section.

### ERN acknowledgement

Any publications with contributions from ERNs should acknowledge involved ERNs in the following way:

“This study was supported by the European Reference Network(s) [add ERN names] ([https://ec.europa.eu/health/ern/networks\\_en](https://ec.europa.eu/health/ern/networks_en)).”

## Annex I: Solve-RD author lists

### 'Solve-RD consortium'

**EKUT:** Olaf Riess<sup>1, 2</sup>, Tobias B. Haack<sup>1, 2</sup>, Holm Graessner<sup>1, 2</sup>, Stephan Ossowski<sup>1, 3, 4</sup>, Birte Zurek<sup>1, 2</sup>, Kornelia Ellwanger<sup>1, 2</sup>, German Demidov<sup>1</sup>, Marc Sturm<sup>1</sup>, Joohyun Park<sup>1</sup>, Leon Schütz<sup>1</sup>, Julia M. Schulze-Hentrich<sup>1, 5</sup>, Rebecca Schüle<sup>6, 7</sup>, Jishu Xu<sup>6, 8</sup>, Melanie Kellner<sup>6, 8</sup>, Baptist Resch<sup>7</sup>, Ingrid Kolen<sup>7</sup>, Matthias Synofzik<sup>6, 8</sup>, Carlo Wilke<sup>6, 8</sup>, Andreas Träschütz<sup>6, 8</sup>, Danique Beijer<sup>9</sup>, Peter Heutink<sup>6, 8</sup>, Ludger Schöls<sup>6, 8</sup>, Holger Hengel<sup>6, 8</sup>, Holger Lerche<sup>10</sup>, Christian Boßelmann<sup>10</sup>, Josua Kegele<sup>10</sup>, Robert Lauerer-Braun<sup>10</sup>, Stephan Lauxmann<sup>10</sup>

**RUMC:** Han Brunner<sup>11-13</sup>, Hans Scheffer<sup>11, 12</sup>, Noline Hoogerbrugge<sup>11, 14</sup>, Alexander Hoischen<sup>11, 14, 15</sup>, Peter A.C. 't Hoen<sup>14, 16</sup>, Lisenka E.L.M. Vissers<sup>11, 12</sup>, Christian Gilissen<sup>11, 14</sup>, Wouter Steyaert<sup>11, 14</sup>, Karolis Sablauskas<sup>11</sup>, Richarda M. de Voer<sup>11, 14</sup>, Erik-Jan Kamsteeg<sup>11</sup>, Bart van de Warrenburg<sup>12, 17</sup>, Nienke van Os<sup>12, 17</sup>, Iris te Paske<sup>11, 14</sup>, Erik Janssen<sup>11, 14</sup>, Elke de Boer<sup>11, 12</sup>, Marloes Steehouwer<sup>11</sup>, Burcu Yaldiz<sup>11</sup>, Kornelia Neveling<sup>11</sup>, Bart van der Sanden<sup>11</sup>, Lydia Sagath<sup>11</sup>, Tjitske Kleefstra<sup>11, 12</sup>

**University of Leicester:** Anthony J. Brookes<sup>18</sup>, Spencer Gibson<sup>18</sup>, Umar Riaz<sup>18</sup>, Greg Warren<sup>18</sup>, Sai Anuhya Nalagandla<sup>18</sup>, Yunze Patrick Wang<sup>18</sup>, Deepthi Sukumaran<sup>18</sup>, Sadegh Abadijoui<sup>18</sup>

**UNEW:** Ana Töpf<sup>19</sup>, Volker Straub<sup>19</sup>, Chiara Marini Bettolo<sup>19</sup>, Jordi Diaz Manera<sup>19</sup>, Sophie Hambleton<sup>20</sup>, Karin Engelhardt<sup>20</sup>

**MUH:** Jill Clayton-Smith<sup>21, 22</sup>, Siddharth Banka<sup>21, 22</sup>, Elizabeth Alexander<sup>22</sup>, Adam Jackson<sup>21, 22</sup>

**DIJON:** Laurence Faivre<sup>23-27</sup>, Christel Thauvin<sup>23-27</sup>, Antonio Vitobello<sup>25</sup>, Anne-Sophie Denommé-Pichon<sup>25</sup>, Yannis Duffourd<sup>25, 26</sup>, Ange-Line Buel<sup>25</sup>, Victor Couturier<sup>25</sup>

**CNAG-CRG:** Sergi Beltran<sup>28, 29</sup>, Ivo Glynne Gut<sup>28, 30</sup>, Steven Laurie<sup>28, 30</sup>, Davide Piscia<sup>28</sup>, Leslie Matalonga<sup>28, 30</sup>, Anastasios Papakonstantinou<sup>28, 30</sup>, Gemma Bullich<sup>28, 30</sup>, Alberto Corvo<sup>28, 30</sup>, Marcos Fernandez-Callejo<sup>28, 30</sup>, Carles Hernández<sup>28, 30</sup>, Daniel Picó<sup>28, 30</sup>, Ida Paramonov<sup>28, 30</sup>, Anna Esteve Codina<sup>28, 31</sup>, Marc Dabad<sup>28</sup>, Marta Gut<sup>28, 31</sup>, Emanuele Raineri<sup>28</sup>, Hanns Lochmüller<sup>28, 30</sup>

**EURORDIS:** Gulcin Gumus<sup>32</sup>, Virginie Bros-Facer<sup>33</sup>

**INSERM-Orphanet:** Ana Rath<sup>34</sup>, Marc Hanauer<sup>34</sup>, David Lagorce<sup>34</sup>, Oscar Hongnat<sup>34</sup>, Maroua Chahdil<sup>34</sup>, Caterina Lucano<sup>34</sup>, Emeline Lebreton<sup>34</sup>

**INSERM-ICM:** Giovanni Stevanin<sup>35, 36</sup>, Alexandra Durr<sup>35, 37</sup>, Claire-Sophie Davoine<sup>35</sup>, Léna Guillot-Noel<sup>35</sup>, Anna Heinzmann<sup>35, 37</sup>, Giulia Coarelli<sup>35, 37</sup>

**INSERM-CRM:** Gisèle Bonne<sup>38</sup>, Teresinha Evangelista<sup>38, 39</sup>, Valérie Allamand<sup>38</sup>, Isabelle Nelson<sup>38</sup>Fehler! Textmarke nicht definiert., Rabah Ben Yaou<sup>38-40</sup>Fehler! Textmarke nicht definiert., Corinne Metay<sup>38, 41</sup>, Bruno Eymard<sup>38, 39</sup>, Enzo Cohen<sup>38</sup>, Antonio Atalaia<sup>38</sup>, Tanya Stojkovic<sup>38, 39</sup>

**Univerzita Karlova:** Milan Macek Jr.<sup>42</sup>, Marek Turnovec<sup>42</sup>, Dana Thomasová<sup>42</sup>, Radka Pourová Kremlíková<sup>42</sup>, Vera Franková<sup>42</sup>, Markéta Havlovicová<sup>42</sup>, Lukáš Ryba<sup>42</sup>, Petra Lišková<sup>43, 44</sup>, Pavla Doležalová<sup>45</sup>, Alice Krebsová<sup>46</sup>

**EMBL-EBI:** Helen Parkinson<sup>47</sup>, Thomas Keane<sup>47</sup>, Mallory Freeberg<sup>47</sup>, Coline Thomas<sup>47</sup>, Dylan Spalding<sup>47, 48</sup>

**Jackson Laboratory:** Peter Robinson<sup>49, 50</sup>, Daniel Danis<sup>49</sup>

**KCL:** Glenn Robert<sup>51</sup>, Alessia Costa<sup>52</sup>

**UCL-IoN:** Mike Hanna<sup>53</sup>, Henry Houlden<sup>54</sup>, Mary Reilly<sup>53</sup>, Jana Vandrovčova<sup>54</sup>, Stephanie Efthymiou<sup>54</sup>, Heba Morsy<sup>54, 55</sup>, Elisa Cali<sup>54</sup>, Francesca Magrinelli<sup>56</sup>, Sanjay M. Sisodiya<sup>57</sup>, Ravishankara Bellampalli<sup>57</sup>, Patrick Moloney<sup>57</sup>, Jonathan Rohrer<sup>58</sup>

**UCL-ICH**, Francesco Muntoni<sup>59, 60</sup>, Irina Zaharieva<sup>59</sup>, Anna Sarkozy<sup>59</sup>, Luke Perry<sup>59, 60</sup>, Veronica Pini<sup>59</sup>, Juliane Müller<sup>59</sup>

**Universiteit Antwerpen**: Vincent Timmerman<sup>61, 62</sup>, Jonathan Baets<sup>63, 64</sup>, Geert de Vries<sup>62, 63</sup>, Jonathan De Winter<sup>62-64</sup>, Peter de Jonghe<sup>62, 64</sup>, Liedewei Van de Vondel<sup>61-63</sup>, Willem De Ridder<sup>62-64</sup>, Sarah Weckhuysen<sup>63-65</sup>, Hannah Stamberger<sup>64, 65</sup>, Charissa Millevert<sup>64, 65</sup>, Noor Smal<sup>65</sup>

**Uni Naples/Telethon UDP**: Vincenzo Nigro<sup>66, 67</sup>, Manuela Morleo<sup>66, 67</sup>, Michele Pinelli<sup>67</sup>, Sandro Banfi<sup>66, 67</sup>, Annalaura Torella<sup>66, 67</sup>, Roberta Zeuli<sup>66</sup>, Mariateresa Zanobio<sup>66</sup>, Giulio Piluso<sup>66</sup>

**UNIFE**: Alessandra Ferlini<sup>68</sup>, Rita Selvatici<sup>68</sup>, Francesca Gualandi<sup>68</sup>, Stefania Bigoni<sup>68</sup>, Marcella Neri<sup>68</sup>

**UKB**: Stefan Aretz<sup>69, 70</sup>, Isabel Spier<sup>69, 70</sup>, Anna Katharina Sommer<sup>69</sup>, Sophia Peters<sup>69</sup>

**IPATIMUP**: Carla Oliveira<sup>71-73</sup>, Jose Garcia-Pelaez<sup>71, 72</sup>, Rita Barbosa-Matos<sup>71, 72</sup>, Celina São José<sup>71, 72</sup>, Marta Ferreira<sup>71, 72</sup>, Irene Gullo<sup>71-74</sup>, Susana Fernandes<sup>75</sup>, Luzia Garrido<sup>74</sup>, Pedro Ferreira<sup>71, 72, 76</sup>, Fátima Carneiro<sup>71-74</sup>

**UMCG**: Morris A Swertz<sup>77</sup>, Lennart Johansson<sup>77</sup>, Joeri K van der Velde<sup>77</sup>, Gerben van der Vries<sup>77</sup>, Pieter B Neerincx<sup>77</sup>, Dieuwke Roelofs-Prins<sup>77</sup>, David Ruvolo<sup>77</sup>, Marielle van Gijn<sup>78, 79</sup>

Kristin M Abbott<sup>78</sup>, Wilhemina S Kerstjens Frederikse<sup>78</sup>, Eveline Zonneveld-Huijssoon<sup>78</sup>

**Charité**: Sebastian Köhler<sup>80</sup>

**SHU**: Alison Metcalfe<sup>81, 82</sup>, Richard Moore<sup>82</sup>

**APHP**: Alain Verloes<sup>83, 84</sup>, Séverine Drunat<sup>83, 84</sup>, Delphine Heron<sup>85, 86</sup>, Cyril Mignot<sup>85, 87</sup>, Boris Keren<sup>85</sup>, Jean-Madeleine de Sainte Agathe<sup>85</sup>

## Associated Partners

Rami Abou Jamra<sup>88</sup>, Marc Abramowicz<sup>89, 90</sup>, Özge Aksel Kiliçarslan<sup>91</sup>, Nicholas Allen<sup>92</sup>, Francisco Javier Alonso García de la Rosa<sup>93</sup>, Simona Balestrini<sup>94</sup>, Peter Balicza<sup>95</sup>, Tobias Bartolomaeus<sup>88</sup>, Ayşe Nazlı Başak<sup>96</sup>, Laura Batlle Masó<sup>97, 98</sup>, David Beeson<sup>99</sup>, Valerie Benoit<sup>100</sup>, Katherine Benson<sup>101</sup>, Eva Bermejo Sánchez<sup>93</sup>, Emilia K. Bijlsma<sup>102</sup>, Elke Bogaert<sup>103</sup>, Mara Bourboulis<sup>104</sup>, Kaan Boztug<sup>105-109</sup>, Sylvain Brohée<sup>100</sup>, Susan Byrne<sup>110-112</sup>, Andrés Caballero Garcia de Oteyza<sup>113, 114</sup>, Gabriel Capella<sup>115, 116</sup>, Evelina Carpancea<sup>117</sup>, Gianpiero Cavalleri<sup>101, 110, 118</sup>, Ana Cazorro-Gutiérrez<sup>119</sup>, Patrick F. Chinnery<sup>120, 121</sup>, Maria-Roberta Cilio<sup>117</sup>, Andrea Ciolfi<sup>122</sup>, Kristl Claeys<sup>123, 124</sup>, Roger Colobran<sup>125-127</sup>, Isabell Cordts<sup>128</sup>, Judith Cossins<sup>99</sup>, Karin Dahan<sup>100, 129</sup>, Bruno Dallapiccola<sup>122</sup>, Norman Delanty<sup>101, 110, 130</sup>, Christel Depienne<sup>131, 132</sup>, Chantal Depondt<sup>133</sup>, Bart Dermaut<sup>103, 134, 135</sup>, Marcus Deschauer<sup>128</sup>, Julie Desir<sup>100</sup>, Anne Destrée<sup>100</sup>, Minas Drakos<sup>104</sup>, Sarah Duerinckx<sup>133</sup>, Berta Estevez<sup>136, 137</sup>, Athanasios Evangelidou<sup>138</sup>, Chiara Fallerini<sup>139, 140</sup>, Marco Ferilli<sup>122</sup>, Simone Furini<sup>139, 140</sup>, Julien Gagneur<sup>141-143</sup>, Hamidah Ghani<sup>101, 110, 118</sup>, Marie Grealley<sup>101, 110, 144</sup>, Bodo Gribbacher<sup>114, 145-148</sup>, Renzo Guerrini<sup>149</sup>, Peter Hackman<sup>150</sup>, Matthias Haimel<sup>105-107</sup>, Eva Hammar Bouveret<sup>89</sup>, Dimitri Hemelsoet<sup>134, 151</sup>, Rebecca Herzog<sup>152, 153</sup>, Mariette J.V. Hoffer<sup>102</sup>, Elke Holinski-Feder<sup>154</sup>, Rita Horvath<sup>120</sup>, Manon Huibers<sup>155</sup>, Michele Iacomino<sup>156, 157</sup>, Mridul Johari<sup>150</sup>, Elisabeth Kapaki<sup>158</sup>, Deniz Karadurmus<sup>100</sup>, Mert Karakaya<sup>159-162</sup>, Evgenia Kokosalis<sup>104</sup>, Christian Korff<sup>163</sup>, Leon Krass<sup>141-143</sup>, Didier Lacombe<sup>164</sup>, Andreas Laner<sup>165</sup>, Helen Leavis<sup>166</sup>, Damien Lederer<sup>167</sup>, Elsa Leitão<sup>131</sup>, Hanns Lochmüller<sup>91, 168, 169</sup>, Katja Lohmann<sup>170</sup>, Estrella López Martín<sup>93</sup>, Rebeka Luknárová<sup>141</sup>, Alfons Macaya<sup>119, 171</sup>, Sivasankar Malaichamy<sup>91</sup>, Anna Marcé-Grau<sup>119</sup>, Beatriz Martínez Delgado<sup>93</sup>, Sandrine Mary<sup>167</sup>, Frédéric Masclaux<sup>89</sup>, Lambros Mathioudakis<sup>104</sup>, Ales Maver<sup>172</sup>, Patrick May<sup>173</sup>, Isabelle Maystadt<sup>100, 174</sup>, Davide Mei<sup>94</sup>, Christian Mertes<sup>141, 142</sup>, Colombine Meunier<sup>100</sup>, Maria Judit Molnar<sup>95</sup>, Olivier Monestier<sup>100</sup>, Stéphanie Moortgat<sup>100</sup>, Alexander Münchau<sup>152, 175</sup>, Francina Munell<sup>119</sup>, Andrés Nascimento Osorio<sup>136, 176, 177</sup>, Daniel Natera de Benito<sup>136, 176, 177</sup>, Mary O Reghan<sup>112</sup>, Catarina Olimpio<sup>120, 178</sup>, Elena Parrini<sup>94</sup>, Martje Pauly<sup>152, 170</sup>, Belén Pérez-Dueñas<sup>119</sup>, Borut Peterlin<sup>172</sup>, Konrad Platzer<sup>88</sup>, Kiran Polavarapu<sup>91</sup>, Bruce Poppe<sup>103, 134, 135</sup>, Manuel Posada De la Paz<sup>93</sup>, Flavia Privitera<sup>139, 140</sup>, Francesca Clementina Radio<sup>122</sup>, Thiloka Ratnaik<sup>179</sup>, Alessandra Renieri<sup>139, 140, 180</sup>, Antonella Riva<sup>156, 181</sup>

Caroline Rooryck<sup>164</sup>, Andreas Roos<sup>91, 182</sup>, Claudia A.L. Ruivenkamp<sup>102</sup>, Andreas Rump<sup>183, 184</sup>, Gijs W.E. Santen<sup>102</sup>, Marco Savarese<sup>150</sup>, Marcello Scala<sup>181, 185</sup>, Katherine Schon<sup>120, 178</sup>, Evelin Schröck<sup>183</sup>, Nika Schuermans<sup>103, 134, 135</sup>, Paolo Scudieri<sup>156, 181</sup>, Martha Spilioti<sup>186</sup>, Verena Steinke-Lange<sup>154</sup>, Pasquale Striano<sup>181, 187</sup>, Yves Sznajer<sup>188</sup>, Marco Tartaglia<sup>122</sup>, Rachel Thompson<sup>91</sup>, Aurelien Trimouille<sup>189</sup>, Bjarne Udd<sup>150, 190, 191</sup>, Paolo Uva<sup>157</sup>, Laura Valle<sup>115, 116</sup>, Lars van der Veken<sup>155</sup>, Roxane van Heurck<sup>89</sup>, Joris van Montfrans<sup>192</sup>, Erika Van Nieuwenhove<sup>192</sup>, Hannah Verdin<sup>103</sup>, David Webb<sup>112</sup>, Brunhilde Wirth<sup>159-162</sup>, Vicente A. Yépez<sup>141</sup>, Ioannis Zaganas<sup>104</sup>, Federico Zara<sup>156, 181</sup>, Kristina Zguro<sup>139, 140</sup>.

## Affiliations

1. Institute of Medical Genetics and Applied Genomics, University of Tübingen, Tübingen, Germany.
2. Centre for Rare Diseases, University of Tübingen, Tübingen, Germany.
3. NGS Competence Center Tübingen (NCCT), University of Tübingen, Tübingen, Germany.
4. Institute for Bioinformatics and Medical Informatics (IBMI), University of Tübingen, Tübingen, Germany.
5. Department of Genetics/Epigenetics, Faculty NT, Saarland University, Saarbrücken, Germany.
6. Department of Neurodegeneration, Hertie Institute for Clinical Brain Research (HIH), University of Tübingen, Tübingen, Germany.
7. Division of Neurodegenerative Diseases and Movement Disorders, Department of Neurology, University of Heidelberg, Heidelberg, Germany.
8. German Center for Neurodegenerative Diseases (DZNE), Tübingen, Germany.
9. Division Translational Genomics of Neurodegenerative Diseases, Hertie-Institute for Clinical Brain Research and Center of Neurology, University of Tübingen, Tübingen, Germany.
10. Department of Neurology and Epileptology, Hertie Institute for Clinical Brain Research (HIH), University of Tübingen, Tübingen, Germany.
11. Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands.
12. Donders Institute for Brain, Cognition and Behaviour, Radboud University Medical Center, Nijmegen, The Netherlands.
13. Department of Clinical Genetics, Maastricht University Medical Centre, Maastricht, the Netherlands.
14. Radboud Institute for Molecular Life Sciences, Nijmegen, The Netherlands.
15. Department of Internal Medicine and Radboud Center for Infectious Diseases (RCI), Radboud University Medical Center, Nijmegen, the Netherlands.
16. Center for Molecular and Biomolecular Informatics, Radboud University Medical Center, Nijmegen, the Netherlands.
17. Department of Neurology, Radboud University Medical Center, Nijmegen, The Netherlands.
18. Department of Genetics and Genome Biology, University of Leicester, Leicester, UK.
19. John Walton Muscular Dystrophy Research Centre, Translational and Clinical Research Institute, Newcastle University and Newcastle Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK.
20. Primary Immunodeficiency Group, Translational and Clinical Research Institute, Newcastle University and Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK.
21. Division of Evolution, Infection and Genomics, School of Biological Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester M13 9WL, UK.
22. Manchester Centre for Genomic Medicine, St Mary's Hospital, Manchester University Hospitals NHS Foundation Trust, Health Innovation Manchester, Manchester M13 9WL, UK.
23. Dijon University Hospital, Genetics Department, Dijon, France.
24. Dijon University Hospital, Centre of Reference for Rare Diseases: Development disorders and malformation syndromes, Dijon, France.
25. Inserm - University of Burgundy-Franche Comté, UMR1231 GAD, Dijon, France.

26. Dijon University Hospital, FHU-TRANSLAD, Dijon, France.
27. Dijon University Hospital, GIMI institute, Dijon, France.
28. Centro Nacional de Análisis Genómico (CNAG), C/Baldiri Reixac 4, 08028 Barcelona, Spain.
29. Departament de Genètica, Microbiologia i Estadística, Facultat de Biologia, Universitat de Barcelona (UB), Barcelona, Spain.
30. Universitat de Barcelona (UB), Barcelona, Spain.
31. Universitat Pompeu Fabra (UPF), Barcelona, Spain.
32. EURORDIS-Rare Diseases Europe, Sant Antoni Maria Claret 167 - 08025 Barcelona, Spain.
33. EURORDIS-Rare Diseases Europe, Plateforme Maladies Rares, 75014 Paris, France.
34. INSERM, US14 - Orphanet, Plateforme Maladies Rares, 75014 Paris, France.
35. Institut du Cerveau, INSERM U1127, CNRS UMR7225, Sorbonne university, Paris, France
36. INCIA, EPHE, CNRS UMR5287, Bordeaux university, Bordeaux, France.
37. Hôpital de la Pitié-Salpêtrière, Assistance Publique-Hôpitaux de Paris (AP-HP), Paris, France.
38. Sorbonne Université, Inserm, Institut de Myologie, Centre de Recherche en Myologie, F-75013 Paris, France.
39. AP-HP, Centre de Référence de Pathologie Neuromusculaire Nord, Est, Ile-de-France, Institut de Myologie, G.H. Pitié-Salpêtrière, F-75013 Paris, France.
40. Institut de Myologie, Equipe Bases de données, G.H. Pitié-Salpêtrière, F-75013 Paris, France.
41. AP-HP, Unité Fonctionnelle de Cardiogénétique et Myogénétique Moléculaire et Cellulaire, G.H. Pitié-Salpêtrière, F-75013 Paris, France.
42. Department of Biology and Medical Genetics, Charles University Prague-2nd Faculty of Medicine and University Hospital Motol, Prague, Czech Republic.
43. Department of Paediatrics and Inherited Metabolic Disorders, First Faculty of Medicine, Charles University and General University Hospital in Prague, Prague, Czech Republic.
44. Department of Ophthalmology, First Faculty of Medicine, Charles University and General University Hospital in Prague, Prague, Czech Republic.
45. Centre for Paediatric Rheumatology and Autoinflammatory Diseases, Department of Paediatrics and Inherited Metabolic Disorders, 1st Faculty of Medicine, Charles University and General University Hospital in Prague, Czech Republic.
46. Department of Cardiology - Institute of Clinical and Experimental Medicine and Department of Biology and Medical Genetics - 2nd Faculty of Medicine Charles University, Prague, Czech Republic
47. European Bioinformatics Institute, European Molecular Biology Laboratory, Wellcome Genome Campus, Hinxton, Cambridge, United Kingdom.
48. CSC-IT Center for Science, 02101 Espoo, Finland.
49. Jackson Laboratory for Genomic Medicine, Farmington, CT 06032, USA.
50. Berlin Institute of Health at Charité – Universitätsmedizin Berlin, Charitéplatz 1, 10117 Berlin, Germany
51. Florence Nightingale Faculty of Nursing, Midwifery & Palliative Care, King's College, London, UK.
52. Society and Ethics Research, Connecting Science, Wellcome Genome Campus, Hinxton, UK.
53. MRC Centre for Neuromuscular Diseases and National Hospital for Neurology and Neurosurgery, UCL Queen Square Institute of Neurology, London, UK.
54. Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, London, UK.
55. Department of Human Genetics, Medical Research Institute, Alexandria University, Egypt.
56. Department of Clinical and Movement Neurosciences, UCL Queen Square Institute of Neurology, University College London, WC1N 3BG.
57. Department of Clinical and Experimental Epilepsy, UCL Queen Square Institute of Neurology, London, UK.
58. Dementia Research Centre, Department of Neurodegenerative Disease, UCL Queen Square Institute of Neurology, London, UK.
59. Dubowitz Neuromuscular Centre, UCL Great Ormond Street Hospital, London, UK.
60. NIHR Great Ormond Street Hospital Biomedical Research Centre, London, United Kingdom.



61. Peripheral Neuropathy Research Group, University of Antwerp, Antwerp, Belgium.
62. Laboratory of Neuromuscular Pathology, Institute Born-Bunge, University of Antwerp, Antwerpen, Belgium.
63. Translational Neurosciences, Faculty of Medicine and Health Sciences, University of Antwerp, Belgium.
64. Neuromuscular Reference Centre, Department of Neurology, Antwerp University Hospital, Antwerpen, Belgium.
65. VIB-CMN, Applied and Translational Neurogenomics Group.
66. Dipartimento di Medicina di Precisione, Università degli Studi della Campania "Luigi Vanvitelli", Napoli, Italy.
67. Telethon Institute of Genetics and Medicine, Pozzuoli, Italy.
68. Unit of Medical Genetics, Department of Medical Sciences, University of Ferrara, Italy.
69. Institute of Human Genetics, Medical Faculty, University of Bonn, Bonn, Germany.
70. Center for Hereditary Tumor Syndromes, University Hospital Bonn, Bonn, Germany.
71. i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal.
72. IPATIMUP - Institute of Molecular Pathology and Immunology of the University of Porto, Portugal.
73. Faculty of Medicine, University of Porto, Portugal.
74. CHUSJ, Centro Hospitalar e Universitário de São João, Porto, Portugal.
75. Department of Genetics, Faculty of Medicine, University of Porto, Portugal.
76. Faculty of Sciences, University of Porto, Portugal.
77. Department of Genetics, Genomics Coordination Center, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
78. Department of Genetics, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
79. Department of Human Genetics, Amsterdam UMC, University of Amsterdam, the Netherlands.
80. Ada Health GmbH, Karl-Liebknecht-Str. 1, 10178 Berlin, Germany.
81. College of Health, Well-being and Life-Sciences, Sheffield Hallam University, Sheffield, UK.
82. Advanced Wellbeing Research Centre, Sheffield Hallam University, Olympic Legacy Park, 2 Old Hall Road, Sheffield, S9 3TU.
83. Dept of Genetics, Assistance Publique-Hôpitaux de Paris - Université de Paris, Robert DEBRE University Hospital, 48 bd SERURIER, Paris, France.
84. INSERM UMR 1141 "NeuroDiderot", Hôpital Robert DEBRE, Paris, France.
85. Department of Genetics, Assistance Publique-Hôpitaux de Paris - Sorbonne Université, Pitié-Salpêtrière University Hospital, 83 Boulevard de l'Hôpital, Paris, France.
86. Reference center of rare diseases "intellectual disability of rare causes", Paris, France.
87. Institut du Cerveau (ICM), UMR S 1127, Inserm U1127, CNRS UMR 7225, Sorbonne Université, 75013, Paris, France.
88. Institute of Human Genetics, University of Leipzig Medical Center, Leipzig, Germany.
89. Genetic Medicine Division, University Hospitals and University of Geneva, Geneva, Switzerland.
90. Genetics & Development, Faculty of Medicine, University of Geneva, Geneva, Switzerland.
91. Children's Hospital of Eastern Ontario Research Institute, University of Ottawa, Ottawa, Canada.
92. Paediatric Neurology, University Hospital Galway.
93. Institute of Rare Diseases Research, Spanish Undiagnosed Rare Diseases Cases Program (SpainUDP) & Undiagnosed Diseases Network International (UDNI), Instituto de Salud Carlos III, Madrid, Spain.
94. Neuroscience Department, Children's Hospital A. Meyer-University of Florence, 50139, Florence, Italy.
95. Institute of Genomic Medicine and Rare Diseases, Semmelweis University, Budapest, Hungary.
96. Koç University, School of Medicine, Translational Medicine Research Center, KUTTAM-NDAL Istanbul Turkey.

97. Infection in Immunocompromised Pediatric Patients Research Group, Vall d'Hebron Research Institute (VHIR), Barcelona, Spain.
98. Pediatric Infectious Diseases and Immunodeficiencies Unit, Vall d'Hebron University Hospital (HUVH), Barcelona, Spain.
99. Nuffield Department of Clinical Neurosciences, University of Oxford, UK.
100. Centre de Génétique Humaine, Institut de Pathologie et de Génétique, Gosselies, Belgium.
101. School of Pharmacy and Biomolecular Sciences, RCSI, Dublin, Ireland.
102. Department of Clinical Genetics, Leiden University Medical Center, Leiden, The Netherlands.
103. Center for Medical Genetics, Ghent University Hospital, Ghent, Belgium.
104. Neurology / Neurogenetics Laboratory University of Crete, Heraklion, Crete, Greece.
105. Ludwig Boltzmann Institute for Rare and Undiagnosed Diseases, Vienna, Austria.
106. St. Anna Children's Cancer Research Institute (CCRI), Vienna, Austria.
107. CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, Austria.
108. Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Vienna, Austria.
109. St. Anna Children's Hospital, Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Vienna, Austria.
110. SFI FutureNeuro Research Centre, Dublin, Ireland.
111. Department of Paediatrics, RCSI, Ireland.
112. Department of Paediatrics Neurology, CHI, Dublin, Ireland.
113. Institute for Immunodeficiency, Center for Chronic Immunodeficiency (CCI), Medical Center, Faculty of Medicine, Albert-Ludwigs-University of Freiburg, Germany.
114. RESIST – Cluster of Excellence 2155 to Hanover Medical School, Satellite Center Freiburg, Germany.
115. Bellvitge Biomedical Research Institute (IDIBELL), Barcelona, Spain.
116. Catalan Institute of Oncology (IROCA), Barcelona, Spain.
117. Pediatric Neurology Department, Saint-Luc University Hospital, Université Catholique de Louvain, Brussels, Belgium.
118. SFI Centre for Research Training in Genomics Data Science, Ireland.
119. Pediatric Neurology Research Group, Vall d'Hebron Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain.
120. Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK.
121. Medical Research Council Mitochondrial Biology Unit, University of Cambridge, Cambridge, UK.
122. Molecular Genetics and Functional Genomics, Ospedale Pediatrico Bambino Gesù, IRCCS, Rome, Italy.
123. Department of Neurology, University Hospitals Leuven, Leuven, Belgium.
124. Laboratory for Muscle Diseases and Neuropathies, Department of Neurosciences, and Leuven Brain Institute (LBI), KU Leuven - University of Leuven, Leuven, Belgium.
125. Diagnostic Immunology Research Group, Vall d'Hebron Research Institute (VHIR), Barcelona, Spain.
126. Immunology Division, Genetics Department. Vall d'Hebron University Hospital (HUVH), Barcelona, Spain.
127. Immunology Unit. Department of Cell Biology, Physiology and Immunology. Autonomous University of Barcelona (UAB), Bellaterra, Spain.
128. Department of Neurology, Klinikum rechts der Isar, Technical University Munich, Munich, Germany.
129. Département de néphrologie, Cliniques Universitaires Saint-Luc, Bruxelles, Belgium.
130. Department of Neurology, Beaumont Hospital, Dublin, Ireland.
131. Institute of Human Genetics, University Hospital Essen, University Duisburg-Essen, Essen, Germany.

132. Institut du Cerveau et de la Moelle épinière (ICM), Sorbonne Université, UMR S 1127, Inserm U1127, CNRS UMR 7225, F-75013 Paris, France.
133. Department of Neurology, CUB Erasme Hospital, Hôpital Universitaire de Bruxelles, Université Libre de Bruxelles, Brussels, Belgium.
134. Program for Undiagnosed Rare Diseases (UD-ProZA), Ghent University Hospital, Ghent, Belgium.
135. Department of Biomolecular Medicine, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium.
136. Neuromuscular Disorders Unit , Department of Pediatric Neurology. Hospital Sant Joan de Déu, Barcelona, Spain
137. Laboratory of Neurogenetics and Molecular Medicine - IPER, Institut de Recerca Sant Joan de Déu, Barcelona, Spain.
138. Saint Luke Hospital, Division of Child Neurology, Thessaloniki, Greece.
139. Med Biotech Hub and Competence Center, Department of Medical Biotechnologies, University of Siena, Italy.
140. Medical Genetics, University of Siena, Italy.
141. School of Computation, Information and Technology, Technical University of Munich, Garching, Germany.
142. Institute of Human Genetics, School of Medicine, Technical University of Munich, Munich, Germany.
143. Computational Health Center, Helmholtz Center Munich, Neuherberg, Germany.
144. Department of Clinical Genetics, CHI, Dublin, Ireland.
145. Institute for Immunodeficiency, Center for Chronic Immunodeficiency (CCI), Medical Center, Faculty of Medicine, Albert-Ludwigs-University of Freiburg, Germany.
146. Clinic of Rheumatology and Clinical Immunology, Center for Chronic Immunodeficiency (CCI), Medical Center, Faculty of Medicine, Albert-Ludwigs-University of Freiburg, Germany.
147. DZIF – German Center for Infection Research, Satellite Center Freiburg, Germany.
148. CIBSS – Centre for Integrative Biological Signalling Studies, Albert-Ludwigs University, Freiburg, Germany.
149. Neurofarba Department, University of Florence, Florence, Italy.
150. Folkhälsan Research Centre and Medicum, University of Helsinki, Helsinki, Finland.
151. Dpt. of Neurology, Ghent University Hospital, Ghent, Belgium.
152. Institute of Systems Motor Science, University of Lübeck, Ratzeburger Allee 160, 23562, Lübeck, Germany.
153. Department of Neurology, University Hospital Schleswig Holstein, Ratzeburger Allee 160, 23538, Lübeck, Germany.
154. Medizinische Klinik und Poliklinik IV – Campus Innenstadt, Klinikum der Universität München, Munich, Germany.
155. Department of Genetics, Division Laboratories, Pharmacy and Biomedical Genetics, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.
156. Unit of Medical Genetics, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
157. Clinical Bioinformatics, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
158. Neurochemistry and Biomarker Unit, 1st Department of Neurology, School of Medicine, National and Kapodistrian University of Athens, Eginition Hospital, Athens, Greece.
159. Institute of Human Genetics, University Hospital of Cologne, University Cologne, Kerpener Str. 34, 50931 Cologne, Germany.
160. Center for Molecular Medicine Cologne, University of Cologne, 50931 Cologne, Germany.
161. Institute for Genetics, University of Cologne, 50674 Cologne, Germany.
162. Center for Rare Diseases Cologne, University Hospital Cologne, 50937, Cologne, Germany.
163. Pediatric Neurology Unit, University Hospitals, Geneva, Switzerland.
164. Univ. Bordeaux, MRGM INSERM U1211, CHU de Bordeaux, Service de Génétique Médicale , F-33000 Bordeaux, France.
165. MGZ - Medical Genetics Center, Munich, Germany.

166. Department of Rheumatology & Clinical Immunology, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.
167. Institute of Pathology and Genetics, Charleroi, Belgium.
168. Department of Neuropediatrics and Muscle Disorders, Medical Center, Faculty of Medicine, University of Freiburg, Freiburg, Germany.
169. Centro Nacional de Análisis Genómico (CNAG-CRG), Center for Genomic Regulation, Barcelona Institute of Science and Technology (BIST), Barcelona, Spain.
170. Institute of Neurogenetics, University of Lübeck, Ratzeburger Allee 160, 23562, Lübeck, Germany.
171. Institut de Neurociències, Universitat Autònoma de Barcelona, Barcelona, Spain.
172. Clinical Institute of Genomic Medicine, University Medical Centre Ljubljana, Slovenia.
173. Luxembourg Centre for Systems Biomedicine, University of Luxembourg, Esch-sur-Alzette, Luxembourg.
174. Département de Médecine, Université de Namur (Unamur), Namur, Belgique.
175. Center for Rare Diseases, University Hospital Schleswig-Holstein, Ratzeburger Allee 160, 23562, Lübeck, Germany.
176. Applied Research in Neuromuscular Diseases, Institut de Recerca Sant Joan de Déu, Barcelona, Spain.
177. Center for Biomedical Research Network on Rare Diseases (CIBERER), ISCIII.
178. East Anglian Medical Genetics Service, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK.
179. Department of Paediatrics, University of Cambridge, Cambridge, UK.
180. Genetica Medica, Azienda Ospedaliero-Universitaria Senese, Italy.
181. Department of Neurosciences, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, University of Genoa, Genoa, Italy.
182. Department of Pediatric Neurology, Developmental Neurology and Social Pediatrics, Children's Hospital University of Essen, Essen, Germany.
183. Institute for Clinical Genetics, Faculty of Medicine Carl Gustav Carus, Technical University Dresden, Dresden, Germany.
184. Center for Personalized Oncology, University Hospital Carl Gustav Carus, Technical University Dresden, Dresden, Germany.
185. Pediatric Neurology and Muscular Disease Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
186. 1st Department of Neurology, Aristotle University of Thessaloniki, University General Hospital of Thessaloniki, AHEPA, Thessaloniki, Greece.
187. IRCCS Istituto Giannina Gaslini, Genoa, Italy.
188. Human Genetics Department, Saint-Luc University Hospital, Université Catholique de Louvain, Brussels, Belgium.
189. Laboratoire de Génétique Moléculaire, Service de Génétique Médicale, CHU Bordeaux – Hôpital Pellegrin, Place Amélie Raba Léon, 33076 Bordeaux Cedex, France.
190. Tampere Neuromuscular Center, Tampere, Finland.
191. Vasa Central Hospital, Vaasa, Finland.
192. Department of Pediatric Immunology and Infectious Diseases, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.

**'Solve-RD DITF-ITHACA'**

Kristin M. Abbott<sup>1</sup>, Rami Abou Jamra<sup>2</sup>, Siddharth Banka<sup>3,4</sup>, Tobias Bartolomaeus<sup>2</sup>, Ange-Line Bruel<sup>5,6</sup>, Lucia Pia Bruno<sup>7,8</sup>, Patrick Callier<sup>6</sup>, Michele Carullo<sup>7,8</sup>, Andrea Ciolfi<sup>9</sup>, Jill Clayton-Smith<sup>3,4</sup>, Victor Couturier<sup>5</sup>, Bruno Dallapiccola<sup>9</sup>, Elke de Boer<sup>10,11</sup>, Jean-Madeleine de Sainte Agathe<sup>12</sup>, Anne-Sophie Denommé-Pichon<sup>5,6</sup>, Christel Depienne<sup>13,14</sup>, Séverine Drunat<sup>15,16</sup>, Yannis Duffourd<sup>5,6</sup>, Andreas Dufke<sup>17</sup>, Laurence Faivre<sup>6,18-21</sup>, Chiara Fallerini<sup>7,8</sup>, Tobias B. Haack<sup>17</sup>, Marketa Havlovicova<sup>22</sup>, Delphine Heron<sup>12,23</sup>, Adam Jackson<sup>3,4</sup>, Boris Keren<sup>12</sup>, Mieke Kerstjens<sup>1</sup>, Tjitske Kleefstra<sup>10,11</sup>, Didier Lacombe<sup>24,25</sup>, Caterina Lo Rizzo<sup>26</sup>, Estrella López Martín<sup>27</sup>, Milan Macek Jr.<sup>22</sup>, Francesca Mari<sup>7,8,26</sup>, Beatriz Martínez Delgado<sup>27</sup>, Isabelle Maystadt<sup>28</sup>, Maria Antonietta Mencarelli<sup>26</sup>, Cyril Mignot<sup>12,13</sup>, Manuela Morleo<sup>29</sup>, Vincenzo Nigro<sup>29,30</sup>, Machteld Oud<sup>10,11</sup>, Joohyun Park<sup>17</sup>, Christophe Philippe<sup>5,6</sup>, Michele Pinelli<sup>29</sup>, Simone Pizzi<sup>9</sup>, Konrad Platzer<sup>2</sup>, Manuel Posada<sup>27</sup>, Francesca C. Radio<sup>9</sup>, Alessandra Renieri<sup>7,8,26</sup>, Olaf Riess<sup>17,31</sup>, Caroline Rooryck<sup>24,25</sup>, Lukas Ryba<sup>22</sup>, Hana Safraou<sup>5,6</sup>, Gijs W.E. Santen<sup>32</sup>, Miroslav Stolfa<sup>22</sup>, Marco Tartaglia<sup>9</sup>, Christel Thauvin<sup>6,18-21</sup>, Annalaura Torella<sup>30</sup>, Frédéric Tran Mau-Them<sup>5,6</sup>, Aurélien Trimouille<sup>24,25</sup>, Alain Verloes<sup>15,16</sup>, Lisenka Vissers<sup>10,11</sup>, Antonio Vitobello<sup>5,6</sup>, Pavel Votypka<sup>22</sup>, Roberta Zeuli<sup>30</sup> and Kristina Zguro<sup>7</sup>.

**Affiliations**

1. Department of Genetics, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
2. Institute of Human Genetics, University of Leipzig Medical Center, Leipzig, Germany.
3. Division of Evolution, Infection and Genomics, School of Biological Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester M13 9WL, UK.
4. Manchester Centre for Genomic Medicine, St Mary's Hospital, Manchester University Hospitals NHS Foundation Trust, Health Innovation Manchester, Manchester M13 9WL, UK.
5. Dijon University Hospital- UF innovation en diagnostic génomique, Dijon, France.
6. Inserm - University of Burgundy-Franche Comté, UMR1231 GAD, Dijon, France.
7. Med Biotech Hub and Competence Center, Department of Medical Biotechnologies, University of Siena, Italy.
8. Medical Genetics, University of Siena, Italy.
9. Molecular Genetics and Functional Genomics, Ospedale Pediatrico Bambino Gesù, IRCCS, Rome, Italy.
10. Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands.
11. Donders Institute for Brain, Cognition and Behaviour, Radboud University Medical Center, Nijmegen, The Netherlands.
12. Department of Genetics, Assistance Publique-Hôpitaux de Paris - Sorbonne Université, Pitié-Salpêtrière University Hospital, 83 Boulevard de l'Hôpital, Paris, France.
13. Institut du Cerveau et de la Moelle épinière (ICM), Sorbonne Université, UMR S 1127, Inserm U1127, CNRS UMR 7225, F-75013 Paris, France.
14. Institute of Human Genetics, University Hospital Essen, University Duisburg-Essen, Essen, Germany.
15. Dept of Genetics, Assistance Publique-Hôpitaux de Paris - Université de Paris, Robert DEBRE University Hospital, 48 bd SERURIER, Paris, France.
16. INSERM UMR 1141 "NeuroDiderot", Hôpital Robert DEBRE, Paris, France.
17. Institute of Medical Genetics and Applied Genomics, University of Tübingen, Tübingen, Germany.
18. Dijon University Hospital, Centre of Reference for Rare Diseases: Development disorders and malformation syndromes, Dijon, France.
19. Dijon University Hospital, FHU-TRANSLAD, Dijon, France.
20. Dijon University Hospital, Genetics Department, Dijon, France.

21. Dijon University Hospital, GIMI institute, Dijon, France.
22. Department of Biology and Medical Genetics, Charles University Prague-2nd Faculty of Medicine and University Hospital Motol, Prague, Czech Republic.
23. Reference center of rare diseases "intellectual disability of rare causes", Paris, France.
24. MRGM, Maladies Rares: Génétique et Métabolisme, INSERM U1211, Université de Bordeaux, Bordeaux, France.
25. Service de Génétique Médicale, Centre Hospitalier Universitaire de Bordeaux, Bordeaux, France.
26. Genetica Medica, Azienda Ospedaliero-Universitaria Senese, Italy.
27. Institute of Rare Diseases Research, Spanish Undiagnosed Rare Diseases Cases Program (SpainUDP) & Undiagnosed Diseases Network International (UDNI), Instituto de Salud Carlos III, Madrid, Spain.
28. Centre de Génétique Humaine, Institut de Pathologie et de Génétique, Gosselies, Belgium.
29. Telethon Institute of Genetics and Medicine, Pozzuoli, Italy.
30. Dipartimento di Medicina di Precisione, Università degli Studi della Campania "Luigi Vanvitelli", Napoli, Italy.
31. Centre for Rare Diseases, University of Tübingen, Tübingen, Germany.
32. Department of Clinical Genetics, Leiden University Medical Center, Leiden, The Netherlands.

**'Solve-RD DITF-RND'**

Jonathan Baets<sup>1-3</sup>, Peter Balicza<sup>4</sup>, Selina Banu<sup>5</sup>, Ayşe Nazlı Başak<sup>6</sup>, Danique Beijer<sup>7</sup>, Frederik Braun<sup>8</sup>, Elisa Cali<sup>5</sup>, Ana Laura Cazurro<sup>9</sup>, Viorica Chelban<sup>5</sup>, Patrick Chinnery<sup>10, 11</sup>, Giulia Coarelli<sup>12</sup>, Jonathan de Winter<sup>1-3</sup>, Bart Dermaut<sup>13-15</sup>, Minas Drakos<sup>16</sup>, Alexandra Dürr<sup>17-21</sup>, Stephanie Efthymiou<sup>5</sup>, Lisa-Marie Erlandsson<sup>22, 23</sup>, Fei Gao<sup>10</sup>, Holm Graessner<sup>24, 25</sup>, Lena Guillot-Noel<sup>12</sup>, Tobias Haack<sup>24</sup>, Michael G. Hanna<sup>5</sup>, Dimitri Hemelsoet<sup>14, 26</sup>, Holger Hengel<sup>22, 23</sup>, Rebecca Herzog<sup>27, 28</sup>, Peter Heutink<sup>22, 23</sup>, Rita Horvath<sup>10</sup>, Henry Houlden<sup>5</sup>, Erik-Jan Kamsteeg<sup>29</sup>, Josua Kegele<sup>30</sup>, Melanie Kellner<sup>22, 23</sup>, Christoph Kessler<sup>22, 23</sup>, Evgenia Kokosali<sup>16</sup>, Ingrid Kolen<sup>31</sup>, Holger Lerche<sup>30</sup>, Katja Lohmann<sup>32</sup>, Alfons Macaya<sup>9, 33</sup>, Francesca Magrinelli<sup>34</sup>, Anna Marce Grau<sup>9</sup>, Ales Maver<sup>35</sup>, Judit Molnar<sup>4</sup>, Heba Morsy<sup>5, 36</sup>, Alexander Münchau<sup>27</sup>, Juan Dario Ortigoza-Escobar<sup>37-39</sup>, Martje G. Pauly<sup>27, 28, 32</sup>, Borut Peterlin<sup>35</sup>, Martin Regensburger<sup>40</sup>, Selina Reich<sup>7, 23</sup>, Olaf Riess<sup>24, 25</sup>, Jonathan Rohrer<sup>41</sup>, Vincenzo Salpietro<sup>5</sup>, Ulrike Schara-Schmidt<sup>8</sup>, Ludger Schöls<sup>22, 23</sup>, Nika Schuermans<sup>13-15</sup>, Rebecca Schüle<sup>22, 31</sup>, Giovanni Stevanin<sup>17-19, 21, 42</sup>, Tipu Sultan<sup>5</sup>, Matthis Synofzik<sup>7, 23</sup>, Huma Tariq<sup>5</sup>, Vincent Timmerman<sup>2, 43</sup>, Liedewei van de Vondel<sup>1, 2, 43</sup>, Bart van de Warrenburg<sup>44, 45</sup>, Nienke van Os<sup>44, 45</sup>, Jana Vandrovцова<sup>5</sup>, Hannah Verdin<sup>13</sup>, Edgard Verdura<sup>9</sup>, Sarah Wiethoff<sup>5</sup>, Carlo Wilke<sup>7, 23</sup>, Jürgen Winkler<sup>40</sup>, Jishu Xu<sup>22-24</sup>, Ioannis Zaganas<sup>16</sup>.

**Affiliations**

1. Translational Neurosciences, Faculty of Medicine and Health Sciences, University of Antwerp, Belgium.
2. Laboratory of Neuromuscular Pathology, Institute Born-Bunge, University of Antwerp, Antwerpen, Belgium.
3. Neuromuscular Reference Centre, Department of Neurology, Antwerp University Hospital, Antwerpen, Belgium.
4. Institute of Genomic Medicine and Rare Diseases, Semmelweis University, Budapest, Hungary.
5. Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, London, UK.
6. Koç University, School of Medicine, Translational Medicine Research Center, KUTTAM-NDAL Istanbul Turkey.
7. Division Translational Genomics of Neurodegenerative Diseases, Hertie-Institute for Clinical Brain Research and Center of Neurology, University of Tübingen, Tübingen, Germany.
8. Department of Pediatric Neurology, Centre for Neuromuscular Disorders, Centre for Translational Neuro- and Behavioral Sciences, University Duisburg-Essen, Essen, Germany.
9. Pediatric Neurology Research Group, Vall d'Hebron Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain.
10. Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK.
11. Medical Research Council Mitochondrial Biology Unit, University of Cambridge, Cambridge, UK.
12. Institut du Cerveau, INSERM U1127, CNRS UMR7225, Sorbonne university, Paris, France
13. Center for Medical Genetics, Ghent University Hospital, Ghent, Belgium.
14. Program for Undiagnosed Rare Diseases (UD-ProZA), Ghent University Hospital, Ghent, Belgium.
15. Department of Biomolecular Medicine, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium.
16. Neurology / Neurogenetics Laboratory University of Crete, Heraklion, Crete, Greece.
17. Institut National de la Santé et de la Recherche Médicale (INSERM) U1127, Paris, France.
18. Centre National de la Recherche Scientifique, Unité Mixte de Recherche (UMR) 7225, Paris, France.
19. Unité Mixte de Recherche en Santé 1127, Université Pierre et Marie Curie (Paris 06), Sorbonne Universités, Paris, France.
20. Centre de Référence de Neurogénétique, Hôpital de la Pitié-Salpêtrière, Assistance Publique-Hôpitaux de Paris (AP-HP), Paris, France.
21. Institut du Cerveau - ICM, Paris, France.

22. Department of Neurodegeneration, Hertie Institute for Clinical Brain Research (HIH), University of Tübingen, Tübingen, Germany.
23. German Center for Neurodegenerative Diseases (DZNE), Tübingen, Germany.
24. Institute of Medical Genetics and Applied Genomics, University of Tübingen, Tübingen, Germany.
25. Centre for Rare Diseases, University of Tübingen, Tübingen, Germany.
26. Dpt. of Neurology, Ghent University Hospital, Ghent, Belgium.
27. Institute of Systems Motor Science, University of Lübeck, Ratzeburger Allee 160, 23562, Lübeck, Germany.
28. Department of Neurology, University Hospital Schleswig Holstein, Ratzeburger Allee 160, 23562, Lübeck, Germany.
29. Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands.
30. Department of Neurology and Epileptology, Hertie Institute for Clinical Brain Research (HIH), University of Tübingen, Tübingen, Germany.
31. Division of Neurodegenerative Diseases and Movement Disorders, Department of Neurology, University of Heidelberg, Heidelberg, Germany.
32. Institute of Neurogenetics, University of Lübeck, Ratzeburger Allee 160, 23562, Lübeck, Germany.
33. Institute of Neuroscience, Universitat Autònoma de Barcelona, Barcelona, Spain.
34. Department of Clinical and Movement Neurosciences, UCL Queen Square Institute of Neurology, University College London, WC1N 3BG.
35. Clinical Institute of Genomic Medicine, University Medical Centre Ljubljana, Slovenia.
36. Department of Human Genetics, Medical Research Institute, Alexandria University, Egypt.
37. U-703 Centre for Biomedical Research on Rare Diseases (CIBER-ER), Instituto de Salud Carlos III, Barcelona, Spain.
38. Movement Disorders Unit, Department of Child Neurology, Institut de Recerca Sant Joan de Déu.
39. European Reference Network for Rare Neurological Diseases (ERN-RND), Barcelona, Spain.
40. Department of Molecular Neurology, Friedrich-Alexander-Universität (FAU) Erlangen-Nürnberg, Erlangen, Germany.
41. Dementia Research Centre, Department of Neurodegenerative Disease, UCL Queen Square Institute of Neurology, London, UK.
42. Ecole Pratique des Hautes Etudes, Paris Sciences et Lettres Research University, Paris, France.
43. Peripheral Neuropathy Research Group, University of Antwerp, Antwerp, Belgium.
44. Department of Neurology, Radboud University Medical Center, Nijmegen, The Netherlands.
45. Donders Institute for Brain, Cognition and Behaviour, Radboud University Medical Center, Nijmegen, The Netherlands.



**'Solve-RD DITF-EURO-NMD'**

Özge Aksel-Kiliçarslan<sup>1</sup>, Jonathan Baets<sup>2-4</sup>, Rabah Ben Yaou<sup>5, 6</sup>, Gisèle Bonne<sup>5</sup>, Enrico Bugiardini<sup>7</sup>, Ana Casasús<sup>8</sup>, Patrick F Chinnery<sup>9, 10</sup>, Kristl Claeys<sup>11, 12</sup>, Enzo Cohen<sup>5</sup>, Mireille Cossee<sup>13, 14</sup>, Judith Cossins<sup>15</sup>, Laura Costa<sup>16</sup>, Jonathan de Winter<sup>2-4</sup>, Jordi Diaz Manera<sup>17</sup>, Berta Estevez<sup>18, 19</sup>, Teresinha Evangelista<sup>5</sup>, Alessandra Ferlini<sup>20</sup>, Andrea Gangfuss<sup>21</sup>, Fei Gao<sup>9</sup>, David Gómez<sup>16</sup>, Nora Gómez Lasarte<sup>22</sup>, Peter Hackman<sup>23</sup>, Rita Horvath<sup>9</sup>, Henry Houlden<sup>7</sup>, Mridul Johari<sup>23</sup>, Danny Jomaa<sup>24</sup>, Mert Karakaya<sup>25-28</sup>, Jarred Lau<sup>1</sup>, Hanns Lochmüller<sup>1, 29, 30</sup>, Adolfo López de Munain Arregui<sup>22</sup>, Will Macken<sup>31</sup>, Chiara Marini-Bettolo<sup>17</sup>, Pilar Marti<sup>8</sup>, Manuela Morleo<sup>32, 33</sup>, Juliane Müller<sup>31</sup>, Francina Munell<sup>16</sup>, Francesco Muntoni<sup>31</sup>, Francesco Musacchia<sup>32, 33</sup>, Andres Nacimiento Osorio<sup>18</sup>, Daniel Natera<sup>18</sup>, Isabelle Nelson<sup>5</sup>, Vincenzo Nigro<sup>32, 33</sup>, Catarina Olimpo<sup>34</sup>, Aurelien Perrin<sup>13, 14</sup>, Luke Perry<sup>31</sup>, Giulio Piluso<sup>32</sup>, Michele Pinelli<sup>33, 35</sup>, Veronica Pini<sup>31</sup>, Rob Pitceathly<sup>31</sup>, Kiran Polavarapu<sup>1</sup>, Alessia Pugliese<sup>1</sup>, Penelope Romero<sup>16</sup>, Andreas Roos<sup>1, 21, 36</sup>, Amets Saenz Pena<sup>22</sup>, Manuela Santos<sup>37</sup>, Anna Sarkozy<sup>31</sup>, Marco Savarese<sup>23</sup>, Rita Selvatici<sup>20</sup>, Malaichamy Sivasankar<sup>1</sup>, Volker Straub<sup>17</sup>, Rachel Thompson<sup>1</sup>, Vincent Timmerman<sup>3, 38</sup>, Ana Topf<sup>17</sup>, Annalaura Torella<sup>32, 33</sup>, Bjarne Udd<sup>23, 39, 40</sup>, Liedewei van de Vondel<sup>2, 3, 38</sup>, Charles van Goethem<sup>13</sup>, Jana Vandrovcova<sup>7</sup>, Alessandra Varavallo<sup>33</sup>, Juan J Vilchez<sup>8</sup>, Brunhilde Wirth<sup>25-28</sup>, Irina Zaharieva<sup>31</sup>, Miren Zulaica<sup>22</sup>.

**Affiliations**

1. Children's Hospital of Eastern Ontario Research Institute, University of Ottawa, Ottawa, Canada.
2. Translational Neurosciences, Faculty of Medicine and Health Sciences, University of Antwerp, Belgium.
3. Laboratory of Neuromuscular Pathology, Institute Born-Bunge, University of Antwerp, Antwerpen, Belgium.
4. Neuromuscular Reference Centre, Department of Neurology, Antwerp University Hospital, Antwerpen, Belgium.
5. Sorbonne Université, Inserm, Institut de Myologie, Centre de Recherche en Myologie, F-75013 Paris, France.
6. Service des bases de données, Institut de Myologie, F-75013 Paris, France.
7. Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, London, UK.
8. Health Research Institute Hospital La Fe, Valencia, Spain.
9. Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK.
10. Medical Research Council Mitochondrial Biology Unit, University of Cambridge, Cambridge, UK.
11. Department of Neurology, University Hospitals Leuven, Leuven, Belgium.
12. Laboratory for Muscle Diseases and Neuropathies, Department of Neurosciences, and Leuven Brain Institute (LBI), KU Leuven - University of Leuven, Leuven, Belgium.
13. Laboratoire de Génétique Moléculaire, Centre Hospitalier Universitaire de Montpellier, 34093 Montpellier, France
14. PhyMedExp, Université de Montpellier, INSERM, CNRS, 34093 Montpellier, France.
15. Nuffield Department of Clinical Neurosciences, University of Oxford, UK.
16. Pediatric Neurology Research Group, Vall d'Hebron Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain.
17. John Walton Muscular Dystrophy Research Centre, Translational and Clinical Research Institute, Newcastle University and Newcastle Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK.
18. Neuromuscular Disorders Unit, Department of Pediatric Neurology. Hospital Sant Joan de Déu, Barcelona, Spain
19. Laboratory of Neurogenetics and Molecular Medicine - IPER, Institut de Recerca Sant Joan de Déu, Barcelona, Spain.
20. Unit of Medical Genetics, Department of Medical Sciences, University of Ferrara, Italy.
21. Department of Pediatric Neurology, Developmental Neurology and Social Pediatrics, Children's Hospital University of Essen, Essen, Germany.

22. Hospital Universitario Donostia, San Sebastián, Spain.
23. Folkhälsan Research Centre and Medicum, University of Helsinki, Helsinki, Finland.
24. Queen's School of Medicine, Queen's University, Kingston, Ontario, Canada.
25. Institute of Human Genetics, University Hospital of Cologne, University Cologne, Kerpener Str. 34, 50931 Cologne, Germany.
26. Center for Molecular Medicine Cologne, University of Cologne, 50931 Cologne, Germany.
27. Institute for Genetics, University of Cologne, 50674 Cologne, Germany.
28. Center for Rare Diseases Cologne, University Hospital Cologne, 50937, Cologne, Germany.
29. Department of Neuropediatrics and Muscle Disorders, Medical Center, Faculty of Medicine, University of Freiburg, Freiburg, Germany.
30. Centro Nacional de Análisis Genómico (CNAG-CRG), Center for Genomic Regulation, Barcelona Institute of Science and Technology (BIST), Barcelona, Spain.
31. Dubowitz Neuromuscular Centre, UCL Great Ormond Street Hospital, London, UK.
32. Dipartimento di Medicina di Precisione, Università degli Studi della Campania "Luigi Vanvitelli", Napoli, Italy.
33. Telethon Institute of Genetics and Medicine, Pozzuoli, Italy.
34. Department of Clinical Genetics, Cambridge University Hospital, Cambridge, UK.
35. Università di Napoli Federico II, Napoli, Italy.
36. Department of Neurology, Heimer Institute for Muscle Research, University Hospital Bergmannsheil, Ruhr-University Bochum, 44789 Bochum, Germany.
37. Centro Hospitalar Universitário do Porto, Porto, Portugal.
38. Peripheral Neuropathy Research Group, University of Antwerp, Antwerp, Belgium.
39. Tampere Neuromuscular Center, Tampere, Finland.
40. Vasa Central Hospital, Vaasa, Finland.

**'Solve-RD DITF-GENTURIS'**

Stefan Aretz<sup>1, 2</sup>, Gabriel Capella<sup>3, 4</sup>, Sérgio Castedo<sup>5-8</sup>, Richarda de Voer<sup>9, 10</sup>, Gareth Evans<sup>11</sup>, Susana Fernandes<sup>12</sup>, José Garcia-Pelaez<sup>5, 6</sup>, Luzia Garrido<sup>8</sup>, Elke Holinski-Feder<sup>13, 14</sup>, Noline Hoogerbrugge<sup>9, 10</sup>, David Huntsman<sup>15, 16</sup>, Arne Jahn<sup>17, 18</sup>, C. Marleen Kets<sup>9, 10</sup>, Andreas Laner<sup>14</sup>, Marjolijn Ligtenberg<sup>9, 10, 19</sup>, Nelson Martins<sup>5, 6</sup>, Andrea Meinhardt<sup>17</sup>, Arjen Mensenkamp<sup>9, 10</sup>, Carla Oliveira<sup>5-7</sup>, Sophia Peters<sup>1</sup>, Isabel Quintana<sup>3</sup>, Evelin Schröck<sup>17, 18</sup>, Anna Sommer<sup>1</sup>, Isabel Spier<sup>1, 2</sup>, Liesbeth Spruijt<sup>9, 10</sup>, Verena Steinke-Lange<sup>13, 14</sup>, Iris te Paske<sup>9, 10</sup>, Mariona Terradas<sup>3</sup>, Marc Tischkowitz<sup>20</sup>, Laura Valle<sup>3, 4</sup>, Rachel van der Post<sup>10, 19</sup>, Yasmijn van Herwaarden<sup>10, 21</sup>, Wendy van Zelst-Stams<sup>9, 10</sup>, Doreen William<sup>17, 18</sup>

**Affiliations**

1. Institute of Human Genetics, Medical Faculty, University of Bonn, Bonn, Germany.
2. Center for Hereditary Tumor Syndromes, University Hospital Bonn, Bonn, Germany.
3. Bellvitge Biomedical Research Institute (IDIBELL), Barcelona, Spain.
4. Catalan Institute of Oncology (IROCA), Barcelona, Spain.
5. IPATIMUP - Institute of Molecular Pathology and Immunology of the University of Porto, Portugal.
6. i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal.
7. Faculty of Medicine, University of Porto, Portugal.
8. CHUSJ, Centro Hospitalar e Universitário de São João, Porto, Portugal.
9. Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands.
10. Radboud Institute for Molecular Life Sciences, Nijmegen, The Netherlands.
11. Division of Evolution, Infection and Genomics, School of Biological Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester M13 9WL, UK.
12. Departament of Genetics, Faculty of Medicine, University of Porto, Portugal.
13. Medizinische Klinik und Poliklinik IV – Campus Innenstadt, Klinikum der Universität München, Munich, Germany.
14. MGZ - Medical Genetics Center, Munich, Germany.
15. Department of Pathology and Laboratory Medicine, University of British Columbia, Vancouver, British Columbia, Canada.
16. British Columbia Cancer Agency, Vancouver, British Columbia, Canada.
17. Institute of Clinical Genetics, University Hospital Carl Gustav Carus, Technical University Dresden, Dresden, Germany.
18. National Center for Tumor Diseases (NCT), Dresden, Germany.
19. Department of Pathology, Radboud University Medical Center, Nijmegen, the Netherlands.
20. Academic Department of Medical Genetics, Cambridge University, Cambridge, UK.
21. Department of Gastroenterology, Radboud University Medical Center, Nijmegen, the Netherlands.

**'Solve-RD DITF-EpiCARE'**

Marc Abramowicz<sup>1, 2</sup>, Nicholas Allen<sup>3</sup>, Simona Balestrini<sup>4, 5</sup>, Tobias Bartolomaeus<sup>6</sup>, Ravishankara Bellampalli<sup>7</sup>, Katherine Benson<sup>8, 9</sup>, Francesca Bisulli<sup>10, 11</sup>, Christian Boßelmann<sup>12</sup>, Susan Byrne<sup>8, 9</sup>, Laura Canafoglia<sup>13</sup>, Evelina Carapancea<sup>13</sup>, Barbara Castellotti<sup>14</sup>, Gianpiero Cavalleri<sup>8, 9, 15</sup>, Roberta Cilio<sup>16</sup>, Norman Delanty<sup>8, 9, 17</sup>, Christel Depienne<sup>18</sup>, Chantal Depondt<sup>19</sup>, Sarah Duerinckx<sup>19</sup>, Zakaria Eddafir<sup>20</sup>, Kornelia Ellwanger<sup>21</sup>, Silvana Franceschetti<sup>22</sup>, Elena Freri<sup>23</sup>, Hamidah Ghani<sup>8, 9, 15</sup>, Tiziana Granata<sup>23</sup>, Marie Greally<sup>8, 9, 24</sup>, Renzo Guerrini<sup>4, 5</sup>, Tobias B. Haack<sup>21, 25</sup>, Eva Hammar Bouveret<sup>1</sup>, Michele Iacomino<sup>26</sup>, Rami Jamra<sup>6</sup>, Josua Kegele<sup>6</sup>, Christian Korff<sup>27</sup>, Roland Krause<sup>28</sup>, Alma Kuchler<sup>18</sup>, Robert Lauerer-Braun<sup>12</sup>, Damien Lederer<sup>29</sup>, Elsa Leitão<sup>18</sup>, Holger Lerche<sup>12</sup>, Gaëtan Lesca<sup>30, 31</sup>, David Lewis-Smith<sup>32</sup>, Laura Licchetta<sup>10</sup>, Frédéric Masclaux<sup>1</sup>, Patrick May<sup>28</sup>, Davide Mei<sup>4</sup>, Cyril Mignot<sup>33, 34</sup>, Charissa Millevert<sup>20, 35</sup>, Raffaella Minardi<sup>10</sup>, Patrick Moloney<sup>7</sup>, Hiltrud Muhle<sup>36</sup>, Mary O Reghan<sup>37</sup>, Joohyun Park<sup>21</sup>, Elena Parrini<sup>4</sup>, Manuela Pendziwiat<sup>36, 38</sup>, Konrad Platzner<sup>6</sup>, Johanna Pohl<sup>36</sup>, Mary Sandrine<sup>29</sup>, Marcello Scala<sup>26, 39</sup>, Sanjay Sisodiya<sup>7</sup>, Noor Smal<sup>20</sup>, Hannah Stamberger<sup>20, 35</sup>, Pasquale Striano<sup>26, 39</sup>, Roxane van Heurck<sup>1</sup>, Christina Vosseler-Wolf<sup>21</sup>, David Webb<sup>37</sup>, Sarah Weckhuysen<sup>20, 35, 40</sup>, Federico Zara<sup>26, 39</sup>.

**Affiliations**

1. Genetic Medicine Division, University Hospitals and University of Geneva, Geneva, Switzerland.
2. Genetics & Development, Faculty of Medicine, University of Geneva, Geneva, Switzerland.
3. Paediatric Neurology, University Hospital Galway, Ireland.
4. Neuroscience Department, Meyer Children's Hospital IRCCS, 50139, Florence, Italy.
5. Neurofarba Department, University of Florence, Florence, Italy.
6. Institute of Human Genetics, University of Leipzig Medical Center, Leipzig, Germany.
7. Department of Clinical and Experimental Epilepsy, UCL Queen Square Institute of Neurology, London, UK.
8. School of Pharmacy and Bimolecular Sciences, RCSI, Dublin, Ireland.
9. SFI FutureNeuro Research Centre, Dublin, Ireland.
10. IRCCS Istituto delle Scienze Neurologiche di Bologna, European Reference Network for Rare and Complex Epilepsies (EpiCARE), Bologna, Italy.
11. Department of Biomedical and Neuromotor Sciences, University of Bologna, Bologna Italy.
12. Department of Neurology and Epileptology, Hertie Institute for Clinical Brain Research (HIH), University of Tübingen, Tübingen, Germany.
13. Integrated Diagnostics for Epilepsy, Department of Diagnostic and Technology, European Reference Network EpiCare, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milan, Italy.
14. Unit of Medical Genetics and Neurogenetics, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milan, Italy.
15. SFI Centre for Research Training in Genomics Data Science, Ireland.
16. Division of Pediatric Neurology, Saint-Luc University Hospital, Université Catholique de Louvain, Brussels, Belgium.
17. Department of Neurology, Beaumont Hospital, Dublin, Ireland.
18. Institute of Human Genetics, University Hospital Essen, University Duisburg-Essen, Essen, Germany.
19. Department of Neurology, CUB Erasme Hospital, Hôpital Universitaire de Bruxelles, Université Libre de Bruxelles, Brussels, Belgium.
20. VIB-CMN, Applied and Translational Neurogenomics Group, University of Antwerp, Antwerpen, Belgium.
21. Institute of Medical Genetics and Applied Genomics, University of Tübingen, Tübingen, Germany.
22. Neurophysiopathology, European Reference Network EpiCare, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milan, Italy.

23. Department of Paediatric Neuroscience, European Reference Network EPIcare, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milan, Italy.
24. Department of Clinical Genetics, CHI, Dublin, Ireland.
25. Centre for Rare Diseases, University of Tübingen, Tübingen, Germany.
26. IRCCS Istituto Giannina Gaslini, Genoa, Italy.
27. Pediatric Neurology Unit, University Hospitals, Geneva, Switzerland.
28. Luxembourg Centre for Systems Biomedicine, University of Luxembourg, Esch-sur-Alzette, Luxembourg.
29. Institute of Pathology and Genetics, Charleroi, Belgium.
30. Department of Medical Genetics, Lyon University Hospitals, Lyon, France.
31. NEUROMYOGENE INSTITUTE, Laboratoire Physiopathologie et Génétique du Neurone et du Muscle, NEUROMYOGENE INSTITUTE, CNRS UMR 5261 -INSERM U1315, Université de Lyon - Université Claude Bernard Lyon 1.
32. FutureNeuro SFI Research Centre, RCSI University of Medicine and Health Sciences, Dublin, Ireland.
33. Department of Genetics, Assistance Publique-Hôpitaux de Paris - Sorbonne Université, Pitié-Salpêtrière University Hospital, 83 Boulevard de l'Hôpital, Paris, France.
34. Institut du Cerveau (ICM), UMR S 1127, Inserm U1127, CNRS UMR 7225, Sorbonne Université, 75013, Paris, France.
35. Neuromuscular Reference Centre, Department of Neurology, Antwerp University Hospital, Antwerpen, Belgium.
36. Department of Neuropaediatrics, University Medical Centre Schleswig-Holstein and Christian-Albrechts-University of Kiel, Kiel, Germany.
37. Department of Paediatrics Neurology, CHI, Dublin, Ireland.
38. Institute of Clinical Molecular Biology, Christian-Albrechts-University of Kiel, Kiel, Germany.
39. Department of Neurosciences, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, University of Genoa, Genoa, Italy.
40. Translational Neurosciences, Faculty of Medicine and Health Sciences, University of Antwerp, Belgium.

**'Solve-RD DITF-RITA'**

Kristin Abbott<sup>1</sup>, Laura Batlle-Masó<sup>2, 3</sup>, Kaan Boztug<sup>4-6</sup>, Andres Caballero Garcia de Oteyza<sup>7</sup>, Isabella Ceccherini<sup>8</sup>, Roger Colobran<sup>9, 10</sup>, Virgil Dalm<sup>11, 12</sup>, Pavla Doležalová<sup>13</sup>, Karin Engelhardt<sup>14</sup>, Marco Gattorno<sup>15</sup>, Bodo Grimbacher<sup>7, 16-19</sup>, Matthias Haimel<sup>4</sup>, Sophie Hambleton<sup>14</sup>, Alexander Hoischen<sup>20-22</sup>, Iris Hollink<sup>23</sup>, Manon Huibers<sup>24</sup>, Raul Jimenez Heredia<sup>4, 6</sup>, Anne Sophie Korganow<sup>25</sup>, Helen Leavis<sup>26</sup>, Kars Maassen<sup>27</sup>, Lisette Meerstein-Kessel<sup>23</sup>, Lotte Pape<sup>1</sup>, Giada Recchi<sup>15</sup>, Marta Rusmini<sup>28</sup>, Abraham Rutgers<sup>1</sup>, Anna Segarra Roca<sup>4</sup>, Annet Simons<sup>20</sup>, Paolo Uva<sup>28</sup>, Frank van de Veerdonk<sup>21, 22</sup>, Caspar van der Made<sup>20-22</sup>, Lars van der Veken<sup>24</sup>, Marielle van Gijn<sup>1, 29</sup>, Joris van Montfrans<sup>30</sup>, Erika Van Nieuwenhove<sup>30</sup>, Clementien Vermont<sup>31</sup>, Emil Vorsteveld<sup>20, 22</sup>, Evelien Zonneveld-Huijssoon<sup>1</sup>.

**Affiliations**

1. Department of Genetics, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
2. Infection and Immunity in Pediatric Patient, Vall d'Hebron Research Institute (VHIR), Barcelona, Spain.
3. Pediatric Infectious Diseases and Immunodeficiencies Unit, Children's Hospital. Hospital Universitari Vall d'Hebron (HUVH), Barcelona, Catalonia, Spain.
4. St. Anna Children's Cancer Research Institute (CCRI), Vienna, Austria.
5. CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, Austria.
6. Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Vienna, Austria.
7. Institute for Immunodeficiency, Center for Chronic Immunodeficiency (CCI), Medical Center, Faculty of Medicine, Albert-Ludwigs-University of Freiburg, Germany.
8. Laboratory of Genetics and Genomics of Rare Diseases, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
9. Translational Immunology Research Group, Vall d'Hebron Research Institute (VHIR), Barcelona, Spain.
10. Immunology Division, Hospital Universitari Vall d'Hebron (HUVH), Barcelona, Catalonia, Spain.
11. Department of Internal Medicine, division of Allergy & Clinical Immunology, Erasmus UMC, Rotterdam, the Netherlands.
12. Department of Immunology, Erasmus UMC, Rotterdam, the Netherlands.
13. Centre for Paediatric Rheumatology and Autoinflammatory Diseases, Department of Paediatrics and Inherited Metabolic Disorders, 1st Faculty of Medicine, Charles University and General University Hospital in Prague, Czech Republic.
14. Primary Immunodeficiency Group, Translational and Clinical Research Institute, Newcastle University and Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK.
15. Rheumatology and Autoinflammatory Diseases Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
16. Clinic of Rheumatology and Clinical Immunology, Center for Chronic Immunodeficiency (CCI), Medical Center, Faculty of Medicine, Albert-Ludwigs-University of Freiburg, Germany.
17. DZIF – German Center for Infection Research, Satellite Center Freiburg, Germany.
18. CIBSS – Centre for Integrative Biological Signalling Studies, Albert-Ludwigs University, Freiburg, Germany.
19. RESIST – Cluster of Excellence 2155 to Hanover Medical School, Satellite Center Freiburg, Germany.
20. Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands.
21. Department of Internal Medicine and Radboud Center for Infectious Diseases (RCI), Radboud University Medical Center, Nijmegen, the Netherlands.

22. Research Institute for Medical Innovation, Radboud University Medical Center, Nijmegen, The Netherlands.
23. Department of Clinical Genetics, Erasmus UMC, Rotterdam, the Netherlands.
24. Department of Genetics, Division Laboratories, Pharmacy and Biomedical Genetics, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.
25. Strasbourg University Hospital, Strasbourg, France.
26. Department of Rheumatology & Clinical Immunology, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.
27. Department of Genetics, Genomics Coordination Center, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
28. Clinical Bioinformatics Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy.
29. Department of Human Genetics, Amsterdam UMC, University of Amsterdam, the Netherlands.
30. Department of Pediatric Immunology and Infectious Diseases, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands.
31. Department of Pediatrics, Division of Pediatric Infectious Diseases and Immunology, Erasmus UMC, Rotterdam, the Netherlands.