

## Faculty

### Journal CME 38.04: Investigation of Shared Genetic Risk Factors Between Parkinson's Disease and Cancers

Pierre-Emmanuel Sugier, PhD,<sup>1,2\*</sup>  Elise A. Lucotte, PhD,<sup>1</sup> Cloé Domenighetti, PhD,<sup>1</sup>  Matthew H. Law, PhD,<sup>3,4</sup> Mark M. Iles, PhD,<sup>5</sup> Kevin Brown, PhD,<sup>6</sup> Christopher Amos, PhD,<sup>7</sup> James D. McKay, PhD,<sup>8</sup> Rayjean J. Hung, PhD,<sup>9,10</sup> Mojgan Karimi, MSc,<sup>1</sup> Delphine Bacq-Daian, MSc,<sup>11</sup> Anne Boland-Augé, PhD,<sup>11</sup> Robert Olaso, PhD,<sup>11</sup> Jean-françois Deleuze, PhD,<sup>11</sup> Fabienne Lesueur, PhD,<sup>12</sup> Evgenia Ostroumova, PhD,<sup>8</sup> Ausrele Kesminiene, MD,<sup>8</sup> Florent de Vathaire, PhD,<sup>13</sup> Pascal Guénel, MD, PhD,<sup>1</sup> on behalf of the EPITHYR consortium, Ashwin Ashok Kumar Sreelatha, PhD,<sup>14</sup> Claudia Schulte, MSc,<sup>15,16</sup>  Sandeep Grover, PhD,<sup>14</sup>  Patrick May, PhD,<sup>17</sup>  Dheeraj R. Bobbili, PhD,<sup>17</sup>  Milena Radivojkov-Blagojevic, MSc,<sup>18</sup> Peter Lichtner, PhD,<sup>18</sup> Andrew B. Singleton, PhD,<sup>19,20</sup> Dena G. Hernandez, PhD,<sup>19</sup> Connor Edsall, PhD,<sup>19</sup> George D. Mellick, PhD,<sup>21</sup> Alexander Zimprich, MD,<sup>22</sup>  Walter Pirker, MD,<sup>23</sup> Ekaterina Rogava, PhD,<sup>24</sup> Anthony E. Lang, MD,<sup>25,26,27</sup>  Sulev Koks, MD, PhD,<sup>28,29</sup> Pille Taba, MD, PhD, FEAN,<sup>30,31</sup> Suzanne Lesage, PhD,<sup>32</sup> Alexis Brice, MD,<sup>32</sup> Jean-Christophe Corvol, MD, PhD,<sup>32,33</sup>  Marie-Christine Chartier-Harlin, PhD,<sup>34</sup> Eugénie Mutez, MD,<sup>34</sup>  Kathrin Brockmann, MD,<sup>15,16</sup>  Angela B. Deuschländer, MD,<sup>35,36</sup>  Georges M. Hadjigeorgiou, MD,<sup>37,38,39</sup> Efthimios Dardiotis, MD,<sup>38</sup> Leonidas Stefanis, MD, PhD,<sup>40,41</sup>  Athina Maria Simitsi, MD, PhD,<sup>40</sup> Enza Maria Valente, MD, PhD,<sup>42,43</sup>  Simona Petrucci, MD, PhD,<sup>44,45</sup> Letizia Straniero, PhD,<sup>46</sup> Anna Zecchinelli, MD,<sup>47</sup> Gianni Pezzoli, MD,<sup>48</sup> Laura Brighina, MD, PhD,<sup>49,50</sup> Carlo Ferrarese, MD, PhD,<sup>49,50</sup> Grazia Annesi, PhD,<sup>51</sup> Andrea Quattrone, MD,<sup>52,53</sup> Monica Gagliardi, PhD,<sup>53</sup> Hirotaka Matsuo, MD, PhD,<sup>54</sup> Akiyoshi Nakayama, MD,<sup>54</sup> Nobutaka Hattori, MD, PhD,<sup>55</sup> Kenya Nishioka, MD, PhD,<sup>55</sup> Sun Ju Chung, MD, PhD,<sup>56</sup>  Yun Joong Kim, MD, PhD,<sup>57</sup> Pierre Kolber, MD,<sup>58</sup> Bart P.C. van de Warrenburg, MD, PhD,<sup>59</sup> Bastiaan R. Bloem, MD, PhD,<sup>59</sup> Jan Aasly, MD,<sup>60</sup> Mathias Toft, MD, PhD,<sup>61</sup>  Lasse Pihlstrøm, MD, PhD,<sup>61</sup> Leonor Correia Guedes, MD, PhD,<sup>62,63</sup> Joaquim J. Ferreira, MD, PhD,<sup>62,63,64</sup>  Soraya Bardien, PhD,<sup>65</sup>  Jonathan Carr, PhD,<sup>66</sup> Eduardo Tolosa, MD, PhD,<sup>67,68</sup>  Mario Ezquerro, PhD,<sup>69</sup>  Pau Pastor, MD, PhD,<sup>70</sup> Monica Diez-Fairen, MSc,<sup>71,72</sup> Karin Wirdefeldt, MD, PhD,<sup>73,74</sup> Nancy Pedersen, PhD,<sup>74</sup> Caroline Ran, PhD,<sup>75</sup> Andrea C. Belin, PhD,<sup>75</sup> Andreas Puschmann, MD, PhD,<sup>76</sup> Emil Ygland Rödström, MD, PhD,<sup>76</sup> Carl E. Clarke, MD,<sup>77</sup> Karen E. Morrison, MD,<sup>78</sup> Manuela Tan, PhD,<sup>61</sup>  Dimitri Krainc, MD, PhD,<sup>79</sup> Lena F. Burbulla, PhD,<sup>16,79,80,81</sup> Matt J. Farrer, PhD,<sup>82</sup> Rejko Kruger, MD,<sup>17,83,84,85</sup> Thomas Gasser, MD,<sup>15,16</sup> Manu Sharma, PhD,<sup>14,15</sup>  on behalf of the Comprehensive Unbiased Risk Factor Assessment for Genetics and Environment in Parkinson's Disease (Courage-PD) consortium, Thérèse Truong, PhD,<sup>1</sup> and Alexis Elbaz, MD, PhD<sup>1</sup>

<sup>1</sup>Université Paris-Saclay, UVSQ, Inserm, Gustave Roussy, Team "Exposome, Heredity, Cancer and Health", CESP, Villejuif, France

<sup>2</sup>Laboratoire de Mathématiques et de leurs Applications de Pau, E2S UPPA, CNRS, Pau, France

<sup>3</sup>Statistical Genetics, QIMR Berghofer Medical Research Institute, Brisbane, Australia

<sup>4</sup>Faculty of Health, Queensland University of Technology, Brisbane, Australia

<sup>5</sup>Section of Epidemiology and Biostatistics, Leeds Institute of Cancer and Pathology, University of Leeds, Leeds, United Kingdom

<sup>6</sup>Laboratory of Translational Genomics, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Bethesda, Maryland, USA

<sup>7</sup>Institute for Clinical and Translational Research, Baylor Medical College of Medicine, Houston, Texas, USA

<sup>8</sup>International Agency for Research on Cancer, Lyon, France

<sup>9</sup>Lunenfeld-Tanenbaum Research Institute, Sinai Health System, Toronto, Ontario, Canada

<sup>10</sup>Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada

<sup>11</sup>Université Paris-Saclay, CEA, Centre National de Recherche en Génomique Humaine, Institut de Biologie François Jacob, Evry, France

<sup>12</sup>Inserm, U900, Institut Curie, PSL University, Mines ParisTech, Paris, France

<sup>13</sup>Université Paris-Saclay, UVSQ, Gustave Roussy, Inserm, Team "Epidemiology of radiations," CESP, Villejuif, France

<sup>14</sup>Centre for Genetic Epidemiology, Institute for Clinical Epidemiology and Applied Biometry, University of Tübingen, Tübingen, Germany

<sup>15</sup>Department for Neurodegenerative Diseases, Hertie Institute for Clinical Brain Research, University of Tübingen, Tübingen, Germany

<sup>16</sup>German Center for Neurodegenerative Diseases, Tübingen, Germany

<sup>17</sup>Translational Neuroscience, Luxembourg Centre for Systems Biomedicine, University of Luxembourg, Esch-Belval, Luxembourg

<sup>18</sup>Institute of Human Genetics, Helmholtz Zentrum München, Neuherberg, Germany

<sup>19</sup>Molecular Genetics Section, Laboratory of Neurogenetics, National Institute on Aging, National Institutes of Health, Bethesda, Maryland, USA

<sup>20</sup>Center For Alzheimer's and Related Dementias, National Institute on Aging, National Institutes of Health, Bethesda, Maryland, USA

<sup>21</sup>Griffith Institute for Drug Discovery, Griffith University, Nathan, Australia

<sup>22</sup>Department of Neurology, Medical University of Vienna, Vienna, Austria

<sup>23</sup>Department of Neurology, Klinik Ottakring, Vienna, Austria

<sup>24</sup>Tanz Centre for Research in Neurodegenerative Diseases, University of Toronto, Toronto, Ontario, Canada

<sup>25</sup>Edmond J. Safra Program in Parkinson's Disease, Morton and Gloria Shulman Movement Disorders Clinic, Toronto Western Hospital, UHN, Toronto, Ontario, Canada

<sup>26</sup>Division of Neurology, University of Toronto, Toronto, Ontario, Canada

- <sup>27</sup>Krembil Brain Institute, Toronto, Ontario, Canada
- <sup>28</sup>Centre for Molecular Medicine and Innovative Therapeutics, Murdoch University, Murdoch, Australia
- <sup>29</sup>Perron Institute for Neurological and Translational Science, Nedlands, Australia
- <sup>30</sup>Department of Neurology and Neurosurgery, University of Tartu, Tartu, Estonia
- <sup>31</sup>Neurology Clinic, Tartu University Hospital, Tartu, Estonia
- <sup>32</sup>Department of Neurology, Sorbonne Université, Institut du Cerveau-Paris Brain Institute-ICM, INSERM, CNRS, Assistance Publique Hôpitaux de Paris, Paris, France
- <sup>33</sup>Assistance Publique Hôpitaux de Paris, Department of Neurology, CIC Neurosciences, Paris, France
- <sup>34</sup>Université de Lille, Inserm, CHU Lille, UMR-S 1172, LiNCog, Centre de Recherche Lille Neurosciences & Cognition, Lille, France
- <sup>35</sup>Department of Neurology, Ludwig Maximilians University of Munich, Munich, Germany
- <sup>36</sup>Department of Neurology, Max Planck Institute of Psychiatry, Munich, Germany
- <sup>37</sup>Department of Neurology and Department of Clinical Genomics, Mayo Clinic Florida, Jacksonville, Florida, USA
- <sup>38</sup>Department of Neurology, Laboratory of Neurogenetics, University of Thessaly, University Hospital of Larissa, Larissa, Greece
- <sup>39</sup>Department of Neurology, Medical School, University of Cyprus, Nicosia, Cyprus
- <sup>40</sup>1st Department of Neurology, Eginition Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece
- <sup>41</sup>Center of Clinical Research, Experimental Surgery and Translational Research, Biomedical Research Foundation of the Academy of Athens, Athens, Greece
- <sup>42</sup>Department of Molecular Medicine, University of Pavia, Pavia, Italy
- <sup>43</sup>Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS) Mondino Foundation, Pavia, Italy
- <sup>44</sup>UOC Medical Genetics and Advanced Cell Diagnostics, S. Andrea University Hospital, Rome, Italy
- <sup>45</sup>Department of Clinical and Molecular Medicine, Sapienza University of Rome, Rome, Italy
- <sup>46</sup>Department of Biomedical Sciences, Humanitas University, Milan, Italy
- <sup>47</sup>Parkinson Institute, Azienda Socio Sanitaria Territoriale (ASST) Gaetano Pini/CTO, Milan, Italy
- <sup>48</sup>Parkinson Institute, Fontazione Grigioni-Via Zuretti, Milan, Italy
- <sup>49</sup>Department of Neurology, San Gerardo Hospital, Monza, Italy
- <sup>50</sup>Department of Medicine and Surgery and Milan Center for Neuroscience, University of Milano Bicocca, Milan, Italy
- <sup>51</sup>Institute for Biomedical Research and Innovation, National Research Council, Cosenza, Italy
- <sup>52</sup>Institute of Neurology, Department of Medical and Surgical Sciences, Magna Graecia University of Catanzaro, Catanzaro, Italy
- <sup>53</sup>Department of Medical and Surgical Sciences, Neuroscience Research Center, Magna Graecia University, Catanzaro, Italy
- <sup>54</sup>Department of Integrative Physiology and Bio-Nano Medicine, National Defense Medical College, Saitama, Japan
- <sup>55</sup>Department of Neurology, Juntendo University School of Medicine, Tokyo, Japan
- <sup>56</sup>Department of Neurology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea
- <sup>57</sup>Department of Neurology, Yonsei University College of Medicine, Seoul, South Korea
- <sup>58</sup>Neurology, Centre Hospitalier de Luxembourg, Luxembourg, Luxembourg
- <sup>59</sup>Department of Neurology, Radboud University Medical Centre, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, the Netherlands
- <sup>60</sup>Department of Neurology, St. Olav's Hospital and Norwegian University of Science and Technology, Trondheim, Norway
- <sup>61</sup>Department of Neurology, Oslo University Hospital, Oslo, Norway
- <sup>62</sup>Instituto de Medicina Molecular João Lobo Antunes, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal
- <sup>63</sup>Department of Neurosciences and Mental Health, Neurology, Hospital de Santa Maria, Centro Hospitalar Universitario Lisboa Norte (CHULN), Lisbon, Portugal
- <sup>64</sup>Laboratory of Clinical Pharmacology and Therapeutics, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal
- <sup>65</sup>Division of Molecular Biology and Human Genetics, Department of Biomedical Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa
- <sup>66</sup>Division of Neurology, Department of Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa
- <sup>67</sup>Parkinson's Disease & Movement Disorders Unit, Neurology Service, Hospital Clínic de Barcelona, Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain
- <sup>68</sup>Centro de Investigación Biomédica en Red sobre Enfermedades Neurodegenerativas (CIBERNED: CB06/05/0018-ISCI), Barcelona, Spain
- <sup>69</sup>Lab of Parkinson's disease and Other Neurodegenerative Movement Disorders, Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Institut de Neurociències, Universitat de Barcelona, Barcelona, Spain
- <sup>70</sup>Unit of Neurodegenerative Diseases, Department of Neurology, University Hospital Germans Trias i Pujol, Barcelona, Spain
- <sup>71</sup>Fundació per la Recerca Biomèdica i Social Mútua Terrassa, Barcelona, Spain
- <sup>72</sup>Movement Disorders Unit, Department of Neurology, Hospital Universitari Mutua de Terrassa, Barcelona, Spain
- <sup>73</sup>Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden
- <sup>74</sup>Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden
- <sup>75</sup>Department of Neuroscience, Karolinska Institutet, Stockholm, Sweden
- <sup>76</sup>Lund University, Skåne University Hospital, Department of Clinical Sciences Lund, Neurology, Lund, Sweden
- <sup>77</sup>University of Birmingham and Sandwell and West Birmingham Hospitals NHS Trust, Birmingham, United Kingdom
- <sup>78</sup>Faculty of Medicine, Health and Life Sciences, Queens University, Belfast, United Kingdom
- <sup>79</sup>Department of Neurology, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA
- <sup>80</sup>Metabolic Biochemistry, Biomedical Center, Faculty of Medicine, Ludwig-Maximilians-Universität München, Munich, Germany
- <sup>81</sup>Munich Cluster for Systems Neurology (SyNergy), Munich, Germany
- <sup>82</sup>Department of Neurology, McKnight Brain Institute, University of Florida, Gainesville, Florida, USA
- <sup>83</sup>Neurology, Centre Hospitalier de Luxembourg, Luxembourg, Luxembourg
- <sup>84</sup>Parkinson's Research Clinic, Centre Hospitalier de Luxembourg, Luxembourg, Luxembourg
- <sup>85</sup>Transversal Translational Medicine, Luxembourg Institute of Health, Strassen, Luxembourg