



## CURRICULUM VITAE

### Danijela Petrovic

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### University Education

- April 2009: **PhD in Molecular Medicine**, Trinity College Dublin, School of Medicine, Dept. of Clinical Medicine. Project was supervised by Prof. Aideen Long, PhD and Prof. Dermot Kelleher, MD, FMedSci, and was funded by HRB (Health Research Board) of Ireland. PhD project commencement - October 2004, PhD thesis submission - November 2008, PhD Viva Voce - April 2009. Thesis title: *Mechanisms of Immune Evasion Utilised by the Hepatitis C virus*

A study described in this thesis explores and characterises mechanisms of viral evasion in Hepatitis C infection and is focused on two major mechanisms of immune subversion. It elucidates how Hepatitis C virus (HCV) manipulates the ability of lymphocytes to produce cytokines involved in the pathogenesis of hepatitis C and also identifies viral escape mutations associated with viral persistence and chronic HCV infection in an Irish cohort. Work carried out for this thesis should contribute to a better understanding of the molecular mechanisms underlying viral evasion strategies, which contribute to the failure of the immune response and development of chronic HCV infection. It will also help to better understand the host defence, which may be useful for our understanding of natural and vaccine-induced immunity, leading to the development of more effective therapeutic and prevention strategies.

During my PhD I utilised different techniques and carried out various duties.

- Cell Culture techniques on peripheral blood cells and cell lines
- Molecular Biology techniques including: extraction of peripheral blood mononuclear cells (PBMCs), cryopreservation and revival of PBMCs, ELISA, ELISpot, immunocytochemistry and immunofluorescence, microscopy (fluorescent, confocal), cell transfection, siRNA, DNA/RNA extraction, agarose gel electrophoresis, PCR, RT-PCR, flow cytometry
- Bioinformatics – 1) HLA binding epitope prediction databases – Rank-Pep, Bimas, Jenner, ProPred, MAPPP, Net-MHC, SYFPEITHI, IEDB, NCBI Los Alamos HCV database; 2) *In silico* protein translation and alignment – BioEdit Software package and CLC Bio programme
- Data management - proficient in use of Microsoft Windows OS (Word, Excel, Power Point), EndNote, GraphPad. Statistical analyses were performed using Microsoft Excel and this involved calculation of the summary statistics - mean, standard deviation, standard error of the mean and Student t-test. In analysis of sequence variations/amino-acid

substitutions Fisher's exact test was used, while for a quantitative assessment of the level of co-localisation in relevant images Pearson's Correlation Coefficient was utilised.

- Preparation of a project progress reports and presentation of progress to PIs during the group meetings twice a week; Literature review and participations in Journal Clubs (weekly basis); Presentation of current results for Infection and Immunity/Cell Signalling monthly meetings within the group; Preparation of parts of annual HRB grant reports (scientific achievements – results, conferences, publications).
  - Finance management – identification and evaluation of best offers for ordering general laboratory consumables as well as specific reagents; Management of travel expenses for international scientific conferences (once awarded with Trinity travel grant).
  - People management – collaborations with colleagues from the group led by Prof. Cliona O'Farely and groups based overseas: Dr. Paul Klenerman, Peter Medawar Bldg. for Pathogen Research, University of Oxford, UK; Dr. Silvana Gaudieri, Centre for Clinical Immunology and Biomedical Statistics, Royal Perth Hospital and Murdoch University, Perth, Australia; Prof. Jane McKeating, Division of Infection and Immunity, University of *Birmingham, UK. Close interactions with the colleagues from Hepatology Unit and Microbiology department, St.James's Hospital, Dublin with regard to collection of patients' samples; Liaising with different suppliers and manufacturers for the purpose of ordering and technical support.*
  - Demonstrations (practical lectures) - Teaching assistantship in Cell Biology and Human and Medical Genetics for postgraduate students (Masters in Molecular Medicine, Dept. of Clinical Medicine, Trinity College Dublin)
- November 1998 – **BSc in Molecular Biology and Physiology** - Experimental Biomedical Sciences option, Faculty of Biology, University of Belgrade, Serbia. Degree level is 1<sup>st</sup> Class Honours equivalent (89.8/100 average). Final year project performed on the subject of human and medical genetics and was mentored by Professor Dragoslav Marinkovic, PhD and Dr. Milija Veljkovic, PhD. Project title: ***Testicular feminisation***, which was a case report of complete androgen insensitivity syndrome diagnosed during investigation on a patient with a problem of primary sterility. Methodology utilised during this research was cytogenetic analysis of human karyotype, PCR and review of literature.

### **Employment History**

- Jun 2014 – present: **Vice Dean of PhD Studies and Quality Assurance** and **Assistant Professor – docent**, Dept. of Natural Sciences and Mathematics, Faculty of Education Sombor, University of Novi Sad, Serbia. Full time lecturer in three subjects: Natural Sciences II – Biology, Human Biology and Health Education.
- January 2012 – present: **Research Scientist**, Department of Chemistry, Biochemistry and the Environment, Faculty of Sciences, University of Novi Sad, Serbia. Part time post-doctoral scientist on the integral and interdisciplinary research project “Functional, functionalized and improved nanomaterials”. Our research group investigates possible application of fullerene C<sub>60</sub> derivatives as drug delivery vectors and their protective effects against doxorubicin induced cell death.

- Jun 2012 – Jun 2014: **Vice Dean of International Relations and Assistant Professor – docent**, Dept. of Natural Sciences and Mathematics, Faculty of Education Sombor, University of Novi Sad, Serbia. Full time lecturer in three subjects: Natural Sciences II – Biology, Human Biology and Health Education.
- November 2010 – May 2012: **Assistant Professor – docent**, Dept. of Natural Sciences and Mathematics, Faculty of Education Sombor, University of Novi Sad, Serbia. Full time lecturer in two subjects: Natural Sciences II – Biology and Human Biology.
- September 2009 – December 2009: **Post-Doctoral Scientist**, Trinity College Dublin, School of Medicine, Dept. of Clinical Medicine, reported directly to Dr. Aideen Long, PhD. Relevant work experience includes different techniques and various duties previously utilised during PhD studies.
- September 2006 – May 2009: **Problem-based learning (PBL) Tutor**, Trinity College Dublin, School of Medicine, reported directly to course co-ordinator Dr. Aileen Patterson, PhD. PBL module implies teaching assistantship in small group learning (10-12 persons) and promotes self-directed and team work in learning. PBL tutorials were carried out with the first year medical students and enabled them to understand basic and biomedical sciences in the context of human disease and clinical practice. Topics explored during these sessions were from the field of biochemistry, anatomy, physiology, immunology, nutrition and ethics.
- July 2001 – January 2004: **Senior Molecular Biologist**, Center of Medical Genetics, Institute of Mental Health, Belgrade, Serbia, reported directly to the head of department Dr. Snezana Brankovic, MD, PhD. During my time here I implemented:
  - Cell Culture techniques on peripheral blood, amniotic fluid, fetal blood
  - Metaphase chromosome preparation from amniotic fluid cells, cordocentesis samples, peripheral blood cells
  - Cytogenetic analysis of human karyotype and determination of diagnosis
  - Prenatal Diagnosis and Genetic Counseling
  - Training and supervision of staff as required
  - Participation in professional meetings led by the head of department (weekly basis)
  - Maintain of written records of cytogenetic analyses on a daily basis
  - Presentation in two international scientific conferences
- March 1999 – July 2001: **Molecular Biologist**, Cytogenetic Laboratory, Dept. of Laboratory Diagnostic, General Hospital, Subotica, Serbia, reported directly to co-ordinator of cytogenetic and haematology laboratories Mrs. Miroslava Zakic, BSc, MSc. Relevant work experience obtained in this institution includes:
  - Cell Culture techniques on peripheral blood, bone marrow, chorion
  - Metaphase chromosome preparation from peripheral blood cells, bone marrow cells, chorionic villi cells
  - Cytogenetic analysis of human karyotype and determination of diagnosis
  - Determination of Barr's body in buccal mucosa cells
  - PCR (paternity test)
  - Participation in collegiums led by the head of department (weekly basis)
  - Maintain of written records of analyses on a daily basis
  - Presentation in one international scientific conference

#### **Achievements, Conferences, Workshops and Training Programs Attended**

1. **Donald Weir Silver Medal** (PhD/MD Studentship Category) - 1st Prize for excellence in research, November 2007, Institute of Molecular Medicine, Trinity College Dublin, Ireland

2a. Participation in **International conferences**:

- **Effects of a novel fullereneol-doxorubicin nanocomposite on the liver of healthy rats** Mariana Seke, **Danijela Petrovic**, Danica Jovic, Milica Labudovic- Borovic, Zdenko Kanacki, Dragan Zigic, Aleksandar Djordjevic;  
**BIMLS 2015, Belgrade International Molecular Life Science Conference for Students**, University of Belgrade, Serbia, January 2015 (**oral presentation**)

- **Undergraduate students' misconceptions in animal classification**  
Miona Bogosavljevic-Sijakov, **Danijela Petrovic**, Ilinko Krivokucin, Gordana Kozoderovic  
**MALT'14, Multi-dimensional aspects of learning and teaching in science and mathematics education**, Faculty of Education Sombor, University of Novi Sad, Serbia, October 2014 (**oral presentation**)

- **A Comparative Analysis of the Presence of Natural Sciences and Their Didactics in Curricula for Primary Teacher Education**  
Natasa Brankovic, **Danijela Petrovic**  
**ISDET, International Conference – Improvements in Subject Didactics and Education of Teachers**, Serbian Academy of Sciences and Arts, Belgrade, Serbia, October 2013 (**oral presentation**)

- **Professional Teacher Education in Environmental Science via Application of Biological and Chemical Experiments**  
**Danijela Petrovic**, Miona Bogosavljevic Sijakov, Ilinko Krivokucin, Stanko Cvjeticanin  
**ISDET, International Conference – Improvements in Subject Didactics and Education of Teachers**, Serbian Academy of Sciences and Arts, Belgrade, Serbia, October 2013 (**oral presentation**)

- **Pharmacological effect of fullereneol C<sub>60</sub>(OH)<sub>24</sub> nanoparticles on isolated smooth muscle**  
Marija Slavic, Danica Jovic, **Danijela Petrovic**, Ana Mijuskovic, Zorana Orescanin-Dusic, Aleksandra Nikoli-Kokic, Mariana Seke  
**ICOSECS8, 8<sup>th</sup> International Conference of the Chemical Societies of the South-East European Countries**, Belgrade, Serbia, June 2013 (**poster presentation**)

- **Impact of fullereneol C<sub>60</sub>(OH)<sub>24</sub> nanoparticles on growth of *Staphylococcus aureus* and *Escherichia coli***  
Dubravka Milanov, Gordana Kozoderovic, Mariana N. Seke, Danica Jovic, **Danijela Petrovic**, Aleksandar N. Djordjevic  
**ICOSECS8, 8<sup>th</sup> International Conference of the Chemical Societies of the South-East European Countries**, Belgrade, Serbia, June 2013 (**poster presentation**)

- **Implementation of student mini-projects in the primary science teaching**, Cvjeticanin S., Brankovic N., **Petrovic D.**

**International meeting** on ‘Theory and Practice of Connecting and Integrating in Teaching and Learning Process’, Faculty of Education Sombor, University of Novi Sad, Serbia, May, 2012 (**oral presentation**)

**- Effect of host immune pressure on hepatitis C virus evolution: insights from transmission networks**

Silvana Gaudieri (Australia), **Danijela Petrovic** (Ireland), Michaela Lucas (Australia), Ian James (Australia), Abha Chopra (Australia), Don Cooper (Australia), Mina John (Australia), Karen Fitzmaurice (Ireland), Paul Klenerman (UK), Shahzma Merani (Australia)

**XVII International meeting on HCV and related viruses**, Yokohama, Japan, September, 2010 (**oral presentation**)

**- HLA footprinting reveals a novel protective CD8 + T cell response in Hepatitis C virus infection**

Karen Fitzmaurice, **Danijela Petrovic**, Silvana Gaudieri, Elizabeth Freitas, Stuart Sims, Aideen Long, Dermot Kelleher, Paul Klenerman

**British Infection Society 12th Annual Meeting**, University of London, London, UK, May 2008 (**oral presentation**)

**Journal of Infection** Volume 59, Issue 6, pages S428-S429 (December 2009)

**- Defining the Protective Role of HLA-A\*03 in a Single Source HCV Outbreak**

Karen Fitzmaurice, **Danijela Petrovic**, Eugene Dempsey, Joanne Lysaght, Sussanne Norris, Susan McKiernan, Elizabeth Freitas, Silvana Gaudieri, Stuart Sims, Aideen Long, Paul Klenerman, Dermot Kelleher

**One Hundred and Third Annual General Meeting of The Association of Physicians of Great Britain and Ireland 2009**, University of Birmingham, Birmingham, UK, April 2009 (**oral presentation**)

**Q J Med** 2009; Vol. 102, Issue 9: 635-647, Page 646 (September 2009)

**- Mutations in Epitopes Restricted By Protective HLA A3 and HLA DRB1 0401 Alleles Are Associated with the Development of Persistent Hepatitis C Infection**

**Danijela Petrovic**, Eugene Dempsey, Karen Fitzmaurice, Susan M. McKiernan, Aideen Long, Dermot P. Kelleher

**Digestive Disease Week (DDW)**, San Diego, CA, USA, May 2008 (**oral presentation**)

HCV Virology and Pathogenesis DDW08-2230 Danijela Petrovic

Supplement of *Gastroenterology Conference*

April 2008 **Gastroenterology** Vol. 134, Issue 4, Supplement 1, Page A-750

**- The envelope protein of the hepatitis C virus (E2) inhibits IL-2 secretion from T Lymphocytes**

**Danijela Petrovic**, Lucy Golden-Mason, Siobhan Mitchell, Yuri Volkov, Cliona O'Farrelly, Dermot Kelleher, Aideen Long

**Digestive Disease Week (DDW)**, Washington DC, USA, May 2007 (**oral presentation**)

*DDW, Washington DC, May, 2007, Gastroenterology*, Vol. 132, (4), 2007, ppA735

**- Analysis of CD8 T cell responses to HCV in a single source outbreak**

Karen Fitzmaurice, **Danijela Petrovic**, Eugene Dempsey, Aideen Long, Sussanne Norris, Susan McKiernan, Gillian Harcourt, Isla Humphreys, Alison Turner, Eleanor Barnes, Dermot P. Kelleher, Paul Klenerman

**Conference of Federation of Infection Societies, Cardiff, UK, November 2007 (oral presentation)**

**-Predicted Hepatitis C virus (HCV) Epitope Mapping for Protective HLA-A3 Allele**

**Danijela Petrovic**, Elizabeth Freitas, Silvana Gaudieri, Eugene Dempsey, Karen Fitzmaurice, Susan McKiernan, Paul Klenerman, Aileen Long, Dermot Kelleher

**45<sup>th</sup> Annual Meeting of Infectious Diseases Society of America (IDSA), San Diego, CA, USA, October 2007 (poster presentation)**

**-Analysis of CD8 T cell responses to HCV in a single source outbreak**

Karen Fitzmaurice, **Danijela Petrovic**, Aileen Long, Sussanne Norris, Paul Klenerman, Dermot P. Kelleher

**XIV International Symposium on HCV and related viruses, Glasgow, Scotland, UK, September 2007 (poster presentation)**

**- The envelope protein of the hepatitis C virus (E2) inhibits IL-2 secretion from T Lymphocytes**

**Danijela Petrovic**, Lucy Golden-Mason, Siobhan Mitchell, Yuri Volkov, Cliona O'Farrelly, Dermot Kelleher, Aileen Long

**XIV International Symposium on HCV and related viruses, Glasgow, Scotland, UK, September 2007 (poster presentation)**

**- Rare Chromosomal Abnormalities in Three Male Patients with Azoospermia**

**Danijela Petrovic**, Snezana Brankovic-Niksic, Sanja Nikolic, Marko Jelisavcic, Milka Perovic

**European Conference of Human and Medical Genetics, Birmingham, UK, May 2003 (poster presentation)**

**European Journal of Human Genetics, Vol.11, Supplement 1, May 2003**

**- Cytogenetic and Molecular Analysis of a Father's triple translocation and a Fetal Balanced Double Translocation. Case report.**

Sanja Nikolic, Snezana Brankovic-Niksic, **Danijela Petrovic**, Marko Jelisavcic, Boriana Zaharieva

**European Conference of Human and Medical Genetics, Birmingham, UK, May 2003 (poster presentation)**

**European Journal of Human Genetics, Vol.11, Supplement 1, May 2003**

**- Psychological and Social Sequelae of Therapeutic Abortion in Second Trimester of Pregnancies**

Snezana Brankovic-Niksic, Sanja Nikolic, Gordana Pilic, **Danijela Petrovic**, Marko Jelisavcic

**European Conference of Human and Medical Genetics, Birmingham, UK, May 2003 (poster presentation)**

**European Journal of Human Genetics, Vol.11, Supplement 1, May 2003**

**- Case presentation of Rare Structural Aberration of Chromosome deletion 7q33-qter**

**Danijela Petrovic**, Sanja Nikolic, Marko Jelisavcic

**5<sup>th</sup> Balkan Meeting of Human Genetics, Sofia, Bulgaria, August 2002 (poster presentation)**

- **Cordocentesis at 18-29 Weeks of Gestation: Experience of 647 Cases**  
Snezana Brankovic-Niksic, Sanja Nikolic, **Danijela Petrovic**, Marko Jelisavcic  
**5<sup>th</sup> Balkan Meeting of Human Genetics**, Sofia, Bulgaria, August 2002 (**oral presentation**)

- **Syndrome of Frontonasal Dysplasia. Case review of Autosomal Dominant Transmission**  
Jasmina Durkovic, **Danijela Petrovic**, Ruzica Mihajlovic  
**4<sup>th</sup> Balkan Meeting of Human Genetics**, Novi Sad, Serbia, 2000 (**oral presentation**)  
**Balkan Journal of Medical Genetics**, Vol. 3 (2), 2000

2b. Participation in **National conferences**:

- **IMM Lecture Series**, May 2008, Institute of Molecular Medicine, Dublin, Ireland (**oral presentation**)
- **Irish Society of Gastroenterology Winter Meeting**, Dublin, November 2007, (**oral and poster presentations**)
- **IMM Annual Meeting**, Dublin, November 2007 (**poster presentation**, 1<sup>st</sup> prize - postgraduate students group)
- **Irish Society of Immunology Annual Conference**, Dublin, September 2007 (**poster presentation**, 2<sup>nd</sup> prize - postgraduate students group)
- **1<sup>st</sup> School of Medicine Postgraduate Research Day**, Dublin, September 2007 (**oral presentation**)
- **IMM Annual Meeting**, Dublin, November 2006 (**poster presentation**)
- **DMMC Science Day**, Dublin, October 2006 (**poster presentation**)

3. **Drug Design and Delivery**, MMI course 2009, Albert Lecture Theatre, Royal College of Surgeons in Ireland, Dublin

4. **Practical Tips & Tools for your Stem Cell Research**, Millipore Stem Cell Workshop 2009, O'Reilly Institute, School of Biochemistry & Immunology, Trinity College Dublin

5. **Molecules to Medicines: How Biopharma Delivers**, *DMMC/Wyeth Lecture Course and Workshop*, 2007, Institute of Molecular Medicine, Trinity Centre for Health Sciences, Trinity College Dublin and The Wyeth Biotech Campus, Grange Castle, Dublin

6. **Population Genetics and SNP Analysis**, Practical Workshop, 2007, Institute of Molecular Medicine, Trinity Centre for Health Sciences, Trinity College Dublin

7. **Cellomics High Content Screening European User Group Meeting** 2006, Institute of Molecular Medicine, Trinity Centre for Health Sciences, Trinity College Dublin

8. **Immunobiology and Inflammation**, DMMC Lecture Course, 2006, Education and Research Centre, St. Vincent's University Hospital, Dublin

9. **Cancer Biology to Cancer Medicine**, DMMC Lecture Course, 2006, Institute of Molecular Medicine, Trinity Centre for Health Sciences, Trinity College Dublin

**Publications**

- '*Hepatitis C virus – T cell responses and viral escape mutations*'. **Danijela Petrovic**, Eugene Dempsey, Derek G. Doherty, Dermot Kelleher, Aileen Long. **European Journal of Immunology**, 2012 Jan; 42(1):17-26. doi: 10.1002/eji.201141593

- *'Molecular footprints reveal the impact of the protective HLA-A\*03 allele in hepatitis C virus infection'*. Karen Fitzmaurice, **Danijela Petrovic**, Narayan Ramamurthy, Ruth Simmons, Shazma Merani, Silvana Gaudieri, Stuart Sims, Eugene Dempsey, Elizabeth Freitas, Susan Lea, Susan McKiernan, Suzanne Norris, Aideen Long, Dermot Kelleher and Paul Klenerman. **GUT** 2011, Nov;60(11):1563-71. *Gut* doi:10.1136/gut.2010.228403

-*'Hepatitis C virus targets the T cell secretory machinery as a mechanism of immune evasion'*. **Danijela Petrovic**, Zania Stamataki, Eugene Dempsey, Lucy Golden-Mason, Michael Freely, Derek Doherty, David Prichard, Catherine Keogh, Jennifer Conroy, Siobhan Mitchell, Yuri Volkov, Jane A. McKeating, Cliona O'Farrelly, Dermot Kelleher, Aideen Long. **HEPATOLOGY**, 2011 Jun;53(6):1846-53. doi: 10.1002/hep.24327.

- *'Effect of host immune pressure on Hepatitis C virus evolution: insights from a single source outbreak'*. Shahzma Merani, **Danijela Petrovic**, Ian James, Abha Chopra, Don Cooper, Elizabeth Freitas, Andri Rauch, Julia di Iulio, Mina John, Michaela Lucas, Karen Fitzmaurice, Susan McKiernan, Suzanne Norris, Dermot Kelleher, Paul Klenerman, Silvana Gaudieri. **HEPATOLOGY**, 2011 Feb; 53(2):396-405. doi: 10.1002/hep.24076.

- *'Implementation of student mini-projects in the primary science teaching'*. Cvjeticanin S., Brankovic N., **Petrovic D.** Proceedings 'Theory and Practice of Connecting and Integrating in Teaching and Learning Process' (ed. Natasa Brankovic), Faculty of Education in Sombor, 2012; 21-37. ISBN: 978-86-6095-010-1

### **Languages**

Serbian - mother tongue

English - advance level

Russian - intermediate level

Italian, Latin – basic