

## MARIO LEBENDIKER, Ph.D.

February 2019

### CURRICULUM VITAE

Nationality: Israeli and Argentine

Age: 64 years

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|--------------|---|
| 1954         | Born in Buenos Aires, Argentina   |
| 1971-77      | Biochemistry Studies (Equivalent to B.Sc. and M.Sc.) at the Faculty of Pharmacy and Biochemistry, Buenos Aires University.  |
| 1978         | Assistant in the Biology Department at the Faculty of Pharmacy and Biochemistry, Buenos Aires University.   |
| 1979-82      | Ph.D. in Biochemistry, Animal Virology Center (CEVAN), Buenos Aires University. Recipient of the Fellowship of the National Research Council, Argentina.<br>Thesis: "Analysis of the Macromolecular Components of Foot-and-Mouth Disease Virus. Localization and Identification of the Endonuclease of Virions". Under the Guidance of Dr. Jose La Torre.   |
| 1983-85      | Postdoctoral Fellow at the Department of Molecular Virology, Hadassah Medical School, The Hebrew University of Jerusalem. Sponsor: Professor Raymond Kaempfer. Subject: Translational Control of Eukaryotic Gene Expression.  |
| 1985-1994    | Researcher and Group Leader in the Protein Department of Makor Chemicals, a Local Subsidiary of the Sigma, Aldrich, Fluka Corporation. Jerusalem. <u>Subject</u> : In charge of research, development and production of more than 100 fine biochemical products that became an integral part of Sigma catalogue. The development of each project includes: search out library for valuable new products, estimation of potential markets, development of an industrial strategy for purification; physico-chemical and biological stability of the products; development of a biological assay, and scaling-up. |
| 1994-1996    | Research Assistant at the Department of Microbiological and Molecular Ecology, Life Science Institute, The Hebrew University of Jerusalem. Sponsor Professor Shimon Shuldiner. <u>Subject</u> : Structural information by NMR and X-Ray Crystallography of a membrane transporter.  |
| 1997-Present | In charge of the Protein Purification Facilities at the Wolfson Centre for Applied Structural Biology, Life Science Institute, The Hebrew University of Jerusalem. <u>Subject</u> : the research in our group focuses in how to obtain large quantities of highly purified and biologically active proteins that is necessary for structural and biochemical studies.   |

2000-Present Two week Course for graduate students on Expression and Purification of Recombinant Proteins (Registered Courses 72682, 72681 and 72695).  
 2008-Present Faculty member for Structural Biology in the Experimental Biophysical Methods section of Faculty of 1000 Biology Reports: articles evaluations  
 2010-Present Active member and one of the founders of P4EU: Protein Production Partnership for Europe. **Executive Board Members since December 2016**

## SCIENTIFIC EXPERIENCE

**Ph.D.:** In my doctorate thesis, conducted under the guidance of Dr. La Torre, I have been studying the internal endoribonuclease of Foot-and-Mouth Disease Virions; its purification and characterization. Activation of the endoribonuclease inside the virions. See publications 1-4 and 10.

As a result of these studies we have formulated an experimental vaccine: inactivation of a vaccine virus strain by activation of the virus-associated endonuclease. (Patent: Acta No. 283355/80 Direccion Nacional de Propiedad Industrial Argentina).

**Postdoc:** During my postdoctoral fellowship under the guidance of Professor Raymond Kaempfer, the focus of my studies concentrated on the translational control of eukaryotic gene expression.

1. Differential modulation of binding and interaction of eukaryotic initiation factor 2 (eIF-2) with double stranded RNA, Met-tRNA<sup>f</sup>, mRNA, ATP and GTP.
  2. Superinduction of the human immune interferon gene.
- See publications 5-9 and 11-12.

**Industry:** Researcher and a group leader in the protein department of Sigma Chemicals. I was in charge of the research, development and production of more than 100 fine biochemical products that became an integral part of Sigma catalogue. The development of each project includes: search out library for valuable new products; estimation of potential markets; development of an industrial strategy for purification; physico-chemical and biological stability of the products; development of a biological assay and scaling-up for final processing. The result of this work were:

1. Most of the lectins and lectins conjugated to agarose in Sigma catalogue. For example: Wheat Germ Agglutinin, Phytohemagglutinin PHA-P, Leucoagglutinin PHA-L, Ricinus Toxin, Soybean Agglutinin, Pea Lectin, Galanthus Nivalis, Datura Stramonium, Vicia Faba, Artocarpus Integrifolia, etc.
2. Ribosomal Inhibitor Proteins, like: Ricin A, Abrin, Deglycosylated Ricin A, Gelonin, Momordin, Trichosanthin, etc. These kind of proteins are widely used for preparation of immunotoxins.
3. Bacterial toxins as: Cholera Toxin, Pseudomonas Exotoxin A, Staphylo Alpha-Toxin. Superantigens as: Staphylo Enterotoxin A, B and Toxic Shock Syndrome Toxin I, etc.
4. Proteins of animal and venom origin like Annexins, Desintegrins, Heparan Sulfate Proteoglycans, Cyclophilin, etc.

**Research Assistant:** During my work in the Laboratory of Professor Shimon Schuldiner, the focus of my studies concentrated on a transporter protein. I have purified a very unusual membrane protein. We tried to obtain structural information by NMR and X-Ray Crystallography. I had use

techniques of molecular biology such as site directed mutagenesis, DNA sequence, etc.; techniques of purification of membrane proteins and liposome reconstitution of the activity. See publications 13-20.

**Present Work:** In charge of the Protein Purification Facilities in the Wolfson Center for Applied Structural Biology , Life Science Institute, The Hebrew University of Jerusalem. Elucidation of the nature, function and organization of proteins relies significantly on structural studies. While collaborating on different projects with other units, the research in our group focuses in how to obtain large quantities of highly purified and biologically active proteins that is necessary for crystallization or NMR studies. The Protein Purification Facilities are accessible for students and staff of the University and from biotech Industries, that are interested in over-expression and purification of various proteins, under the guidance of the unit's personal.

## PATENTS

Patent Number: 4,471,054 United States Patent  
Process for Inactivating Foot-and-Mouth Disease Virus  
Lattore Jose; Denoya Claudio; Scodeller Eduardo; Vasquez Cesar; **Lebendiker Mario**;  
Dubra Maria S. and Crespo Oscar Date: Sept. 11 1984

## LIST OF PUBLICATIONS

1. Dubra, M.S., **Lebendiker, M.A.**, Grigera, P.R., Tisminetzky, S.G., Costa Giomi, M.P., Sagedhal, A., La Torre, J.L., and Vasquez, C.(1981) Biologia Molecular del Virus de la Fiebre Aftosa. *Medicina* 41: 221-229.
2. La Torre, J.L., Underwood, B.O., **Lebendiker, M.A.**, Gorman, B.M., and Brown, F. Application of RNAase (1982) T1 one and two-dimensional analysis to the rapid identification of Foot-and-Mouth Disease viruses. *Infection and Immunity* 36: 142-147.
3. Scodeller, E.A., **Lebendiker, M.A.**, Dubra, M.S., Basarab, O., La Torre, J.L., and Vasquez, C.(1982). An experimental vaccine for Foot-and-Mouth Disease Virus. *Proceedings of the 16th Conference of Foot-and-Mouth Disease Virus of the International Organization of Epizootics* 45-55.
4. Scodeller, E.A., **Lebendiker, M.A.**, Dubra, M.S., Crespo, D.A., Basarab, O., La Torre, J.L., and Vasquez, C.(1984).Inactivation of FMDV vaccine strains by activation of virus associated endonuclease. *J. of General Virology*, 65(9): 1567-1573.
5. Itamar, D., Gonsky, R., **Lebendiker, M.**, and Kaempfer, R. (1984) The nature of the interaction of eukaryotic initiation factor 2 with double-stranded RNA. *Eur. J. Biochem.* 145, 373-379.
6. Kaempfer, R., Gonsky, R., and **Lebendiker, M.** (1986). Binding of ATP to eIF-2 induces modulation of its Met-tRNA<sup>f</sup>-and mRNA-binding activities. *In: Translational Control (M. Mathews, ed.), Cold Spring Harbor, N.Y. pp. 58-62.*
7. **Lebendiker, M.A.**, Tal, C., Sayar, D., Pilo, S., Eilon, A., Banai, Y., and Kaempfer, R. (1987). Superinduction of the human gene encoding immune interferon. *EMBO J.* 6, 585-589.
8. Kaempfer, R., Sayar, D., Efrat, S., **Lebendiker, M.**, Ketzinel, M., and Tal, C. (1987) Human interleukin-2 and interferon-gamma gene expression is regulated by suppressor T cells. *Lymphokine Research* 6, 1640.

9. Sayar, D., **Lebendiker, M.**, Silberberg, C., Reshef, A., Gerez, L., Ketzinel, M., and Kaempfer, R. (1988). Superinduction and differential regulation of expression of human IL-2 receptor alpha-subunit mRNA species. *Lymphokine Research* 7, 310.
10. Grigera, P.R., Tisminetzky, S.G., **Lebendiker, M.A.**, Periolo, O.H. and La Torre, J.L. (1988). Presence of a 43-kDa host-cell polypeptide in purified aphthovirions. *Virology* 165 (2): 584-588
11. Gonsky, R., **Lebendiker, M.A.**, Harary, R., Banai, Y., and Kaempfer, R. (1990) Binding of ATP to eukaryotic initiation factor 2: differential modulation of mRNA-binding activity and GTP-dependent binding of Met-tRNA<sup>f</sup>. *J. Biol. Chem.* 265: 9083-9089.
12. Kaempfer, R., Sayar, D., **Lebendiker, M.**, Arad, G., Gerez, L., and Ketzinel, M. (1990) Post-transcriptional regulation of the human gene encoding the p55 alpha-subunit of the IL-2 receptor. *J. Leukocyte Biol. Suppl.* 1, 16.
13. Yerushalmi, H., **Lebendiker, M.A.**, and Schuldiner, S.. (1995) EmrE, an Escherichia coli 12-kDa Multidrug Transporter, Exchanges Toxic Cations and H<sup>+</sup> and Is Soluble in Organic Solvents. *J. Biol. Chem.* 270:6856-6863
14. Arkin, I.T., Russ, W.P., **Lebendiker, M.**, and Schuldiner, S (1996). Determining the Secondary Structure and Orientation of Emr-E, a multi-drug Transporter, indicates a Transmembrane Four Helix Bundle. *Biochemistry* 35: 7233-7238.
15. Schuldiner, S., **Lebendiker, M.**, Mordoch, S., Yelin, R. and Yerushalmi, H. (1996). From multidrug resistance to vesicular neurotransmitter transport. In press (in "*Transport Processes in Membrane*" *Handbook of Biological Physics*, ed. Konings, W.N., Kaback H.R. and Lolkema, J.S. ; Elsevier).
16. **Lebendiker, M.** and Schuldiner, S. (1996). Identification of residues in the translocation pathway of EmrE, a multidrug antiporter from *Escherichia coli*. *J. of Biol. Chem.* 271: 21193-21199.
17. Yerushalmi, H., **Lebendiker, M.A.**, and Schuldiner, S.. (1996). Negative dominance studies demonstrate the oligomeric structure of EmrE, a multidrug antiporter from *Escherichia coli*. *J. of Biol. Chem.* 271: 31044-31048.
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19. Schwaiger, M., **Lebendiker, M.**, Yerushalmi, H., Coles, M., Groger, A., Schwartz, C., Schuldiner, S., and Kessler, H. (1998). NMR-Investigation of the Multidrug Transporter Emr-E an Integral Membrane Protein. *Eur. J. of Biochemistry* 254: 610-619.
20. Steiner Mordoch S., Granot D., **Lebendiker, M.**, and Schuldiner, S. (1999). Scanning Cysteine accessibility of EmrE, an H<sup>+</sup>-coupled Multidrug Transporter from *Escherichia coli*, reveals a Hydrophobic pathway for solutes. *J. of Biol. Chemistry* 274: 19480-19486
21. Tate C., Kunji E., **Lebendiker M.**, and Schuldiner S. (2001). The projection structure of EmrE, a proton linked multidrug transporter from *Escherichia coli*, at 7 Å resolution. *The EMBO Journal* 20: 77-81
22. Orzech E., Okhrimenko H., Reich V., Cohen S., Weiss A., Melamed-Book N., **Lebendiker M.**, Altschuler Y. and Aroeti B. (2001). The AP-1 adaptor of the clathrin coat associates with microtubules via microtubule associated proteins. *J. of Biol. Chemistry* 276 (33): 31340-31348
23. Fish A, **Lebendiker M.**, Nechushtai R & Livnah O (2003). Purification, crystallization and preliminary X-ray analysis of ferredoxin isolated from thermophilic cyanobacterium *Mastigocladus laminosus*. *Acta Crys. D*-59: 734-736

24. Listovsky T., Oren Y., Yudkovsky Y., **Lebendiker M.** and Brandeis M. (2004). Fzr mediates its own degradation. *EMBO J.* 00 : 1-8
25. Klein S., Geiger T., Linchevski I., **Lebendiker M.**, Itkin A., Assayag K. and Levitzki A. (2005) Expression and purification of active PKB kinase in *E. coli* *Protein Expression and Purification* 41: 162–169
26. Sher D., Fishman Y., Zhang M., **Lebendiker M.**, Gaathon A., Manchenio J. and Zlotkin E. (2005) Hydralisins: a new category of diverse Beta-Poreforming toxins in Cnidaria. Characterization and preliminary structure-function analysis. *J. of Biol. Chemistry* 280: 22847 – 22855
27. Diskin R., **Lebendiker M.**, Engelberg L. And Livnah O. (2007) Structures of p38 $\alpha$  Active Mutants Reveal Conformational Changes in L16 Loop that Induce Autophosphorylation and Activation. *J. Mol. Biol.* (2007) 365, 66–76
28. Hayouka Z., Rosenbluh J., Levin A., Loya S., **Lebendiker M.**, Veprintsev D., Kotler M., Hizi A., Loyter A. & Friedler A. (2007) Inhibiting HIV-1 Integrase by Shifting its Oligomerization Equilibrium *PNAS* 104 (20): 8316-8321
29. Shalev-Malul G., Viner-Mozzini Y., Sukenik A., Gaathon A., **Lebendiker M.** and Kaplan A. (2008) An AbrB-like protein might be involved in the regulation of cylindrospermopsin production by *Aphanizomenon ovalisporum*. *Environmental Microbiology* 10(4), 988–999
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32. Reingewertz T.; Benyamini H.; **Lebendiker M.**; Shalev D. and Friedler A. (2009) The C-Terminal Domain of the HIV-1 Vif Protein is Natively Unfolded in its Unbound State. PEDS (Protein Engineering, Design, and Selection) 1–7, doi: 10.1093/protein/gzp004
33. Lieman-Hurwitz J, Haimovich M, Shalev-Malul G, Ishii A, Hihara Y, Gaathon A, **Lebendiker M** and Kaplan A. (2009) A cyanobacterial AbrB-like protein affects the apparent photosynthetic affinity for CO<sub>2</sub> by modulating low-CO<sub>2</sub>-induced gene expression. *Environmental Microbiology* 11(4), 927–936
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35. Elbaz Y, Danieli T, Kanner B and Schuldiner S (2010) Expression of neurotransmitter transporters for structural and biochemical studies. *Protein Expr Purif.* 73:152-160.
36. **Lebendiker M.**, and Danieli T. (2010) Purification of Proteins fused to Maltose-binding Protein. *Protein Chromatography: Methods and Protocols. Editor(s): Dermot Walls, Sinéad T. T. Loughran Series: Methods in Molecular Biology Vol.681: 281-293*
37. Siman P., Blatt O., Moyal T., Danieli T., **Lebendiker M.**, Lashuel H., Friedler A. and Brik A. (2011) Chemical Synthesis and Expression of the HIV-1 Rev Protein *ChemBioChem* 12, 1097 – 1104
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44. Buch M., Wine Y., Dror Y., Rosenheck S., **Lebendiker M.**, Giordano R., Leal R., Popov A., Freeman A and Frolov F. (2014) Protein Products Obtained by Site-Preferred Partial Crosslinking in Protein Crystals and “Liberated” by Redissolution. *Biotechnology and Bioengineering* DOI 10.1002/bit.25186
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51. Shoshan M., Dekel N., Goch W., Shalev D., Danieli T., **Lebendiker M.**, Bal W. and Tshuva E. (2016) Unbound Position II in MXCXXC Metallochaperone Model Peptides Impacts Metal Binding Mode and Reactivity: Distinct Similarities to Whole Proteins. *Journal of Inorganic Biochemistry* doi: 10.1016/j.jinorgbio.2016.02.016
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55. **Lebendiker M.**, and Danieli T. (2017) Purification of Proteins fused to Maltose-binding Protein. *Methods Mol Biol* **1485** 257-273: *Protein Chromatography: Methods and Protocols*. Editor(s): Dermot Walls, Sinéad T. T. Loughran
56. Amartely H., Avraham O., Friedler A., Livnah O. and **Lebendiker M.** (2018) Coupling Multi Angle Light Scattering to Ion Exchange chromatography (IEX-MALS) for protein characterization *Scientific Reports* (2018) 8:6907 DOI:10.1038/s41598-018-25246-6
57. Abbasi R., Mousa R., Dekel N., Amartely H., Danieli T., Lebendiker M., Levi-Kalishman Y., Shalev D., Metanis N., Chai L. (2018) The Bacterial Extracellular Matrix Protein TapA Is a Two-Domain Partially Disordered Protein *Chembiochem*. **19**, 1-6 <https://doi.org/10.1002/cbic.201900009>
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60. **Lebendiker M.** and Amartely H. (2018) How coupling MALS to IEX can help protein characterization *GE Life Science News Center* Nov 27<sup>th</sup> 2018)
61. Amartely H., Some D., Tzadok A. and **Lebendiker M.** (2019) Ion Exchange chromatography (IEX) coupled to Multi Angle Light Scattering (MALS) – for protein separation and characterization *Accepted in JoVE*
62. Some D., Amartely H., Tzadok A. and **Lebendiker M.** (2019) Characterization of proteins by size-exclusion chromatography coupled to multi-angle light scattering (SEC-MALS) *Sent to JoVE (almost accepted)*
63. Shamir M., Amartely H., and **Lebendiker M.** and Friedler A (2019) Characterization of protein oligomers by multi-angle light scattering (MALS) *Sent to Encyclopedia of Analytical Chemistry*.
64. Dekel N., Eisenberg-Domovich Y., Karlas A., von Kries J., **Lebendiker M.**, Danieli T., and Livnah O. (2019) Expression, Purification and Crystallization of Clk1 Kinase – a possible target for anti-influenza therapy *In preparation*

## Website - Journals

- 1) Network manager and founder of the Protein Purification Facility website of The Wolfson Centre in The Hebrew University: This site includes a plethora of information in the protein production field, used by students and researchers of many Universities.  
More than 72,000 entries since September 2006  
<http://www.ls.huji.ac.il/~purification/>

- 2) Network manager of the Protein Production and Purification Partnership in Europe (P4EU) network since October 2011: A platform for the exchange of information, know-how and materials between core facility labs in the field of protein expression and purification.  
<https://p4eu.org/>
- 3) Neubig R, and Roman D, (2004) Sites of interest on the World Wide Web *Mol. Interv.*4: 298
- 4) Lederman L. (2009) Protein Isolation and Purification – Tech News *BioTechniques* 46:87-89  
<http://www.biotechniques.com/BiotechniquesJournal/2009/February/Protein-Isolation-and-Purification/biotechniques-92073.html?service=print>
- 5) F1000, Faculty of 1000, Faculty Member (contributor) since 2008 ( <http://f1000.com/my>)
- 6) Editorial Board of F1000 Research since May 2012 (<http://f1000research.com>)
- 7) GE Healthcare Life Sciences: External Links Resources for Tagged Protein purification  
<http://sciencedirect.verticalsearchworks.com/EN/Microsites/1/GE+Healthcare/Home>
- 8) Pure Pursuits: Techniques for simpler, cheaper, and better antibody purification. By Katherine Bagley. The Scientist May, 1<sup>st</sup> , 2012 <http://the-scientist.com/2012/05/01/pure-pursuits/>

## **Courses in The Hebrew University**

- 1) PURIFICATION & EXPRESSION OF RECOMBINANT PROTEIN #72681  
Mario Lebediker and Tsafi Danieli: Theoretical course two hours per week during one semester  
Years: 2002, 2003, 2005, 2007, 2009, 2010, 2012
- 2) WORKSHOP ON PROTEIN PURIFICATION #72695  
Mario Lebediker: two practical courses, one week each one, 45 hours each course  
Years: 2002, 2003, 2005, 2007, 2009, 2010, 2012
- 3) PROTEIN CHEMISTRY – ADVANCED BIOPHYSICAL METHODS #69703  
Assaf Friedler: 1hour talk
- 4) BIOCHEMISTRY : ADVANCED LEVEL #72339  
Dudy Engelberg: 2 hour talk
- 5) Theoretical Course: Protein Production for Biophysical and Biochemical Studies (#92632) – Hebrew University of Jerusalem, Israel. Nov-Dec 2014 (~28hours course, four days. Participation of near 50 students from all the Hebrew University Campus, Tel Aviv University, Haifa University, Technion and Weizzman Institute)
- 6) Practical Course: Protein Production for Biophysical and Biochemical Studies (#92638) – Hebrew University of Jerusalem, Israel. February 2015 (~24hours course, three days. Participation of six students from the Hebrew University and Haifa University)
- 7) Theoretical Course: Protein Production for Biophysical and Biochemical Studies (#92632) – Hebrew University of Jerusalem, Israel. Oct 2014 to Jan 2016 (2 weekly



*hours course, first semester. Participation of near 16 students from all the Hebrew University Campus and 1 from SIGMA)*

- 8) COURSE of Biochemistry BA April 2018 (same 3hr talk several times)
- 9) Theoretical Course: Protein Production from Academic to Therapy (#92632) – Hebrew University of Jerusalem, Israel. March to July 2018 (2 weekly hours course, second semester. Participation of near 17 students from all the Hebrew University Campus)

### **Congress, Meetings and External Courses**

- 1) PEGS 4<sup>th</sup> Annual Protein Process Development Conference and 10<sup>th</sup> Annual Protein Expression Conference, January 2007, San Diego, USA, (Poster)
- 2) NMR-Life Workshop meeting: “Protein expression and isotope labeling for structural biology” – July 2008, BNMRZ, Garching, Germany  
*TALK: Protein Sample Preparation for Structural and Biophysical Studies - Personal Experience Handling Some Difficult Proteins (1hour talk)*
- 3) PEGS Europe - Protein Engineering Summit, September 2009 - Hannover, Germany (participation)
- 4) Meeting of European Protein Expression Facilities, May 2010 - Heidelberg, Germany and Helmholtz Center for Infection Disease in Braunschweig, Germany  
*TALK: Protein Sample Preparation for Structural and Biophysical Studies - Personal Experience Handling Some Difficult Proteins (1hour talk)*
- 5) GE-Healthcare Innovation day, Tel Aviv, January 2011, 2 days (participation)
- 6) Ilanit / FISEB 2011, February 7-10, 2011, Eilat, Israel (participation)
- 7) First P4EU Meeting (Protein production and purification partnership for Europe) - Halle, Germany 23/2/2011  
*TALK: Protein Aggregation Problems (20 min talk)*  
*Meeting Organizer*
- 8) 4th Halle Conference on Recombinant Protein Production – Halle, Germany 24-26/2/2011  
*TALK: A simple platform for addressing protein aggregation during protein expression and purification steps (40 min talk)*
- 9) PROTEIN PRODUCTION WORKSHOP 2011 - July 6-7, 2011 – Oxford, England  
*TALK: Protein Refolding (40 min talk)*
- 10) P4EU Workshop on Eukaryotic protein expression platforms, Copenhagen Nov29th 2011 (participation)
- 11) Difficult to Express Proteins- 8<sup>th</sup> ANNUAL PEGS – Boston, USA May 1<sup>st</sup> 2012  
*TALK: A Simple Platform for Addressing Protein Aggregation During Protein Expression and Purification Steps (30 min talk)*  
*MODERATOR: Strategies to tackle aggregation problems during purification (90 min talk)*

- 12) P4EU Protein Purification Workshop in IRB Barcelona, Spain June 4<sup>th</sup>, 2012  
*TALK: A difficult to produce RNA binding protein. On-column refolding (30 min talk)*
- 13) *Fifth Annual Protein Purification & Recovery PEPTALK*, The Protein Science week, Palm Spring, California, USA 20/23 January 2013 (Invited for a 40 min talk)  
*TALK: How to Deal with Aggregation Problems of IDPs: "Intrinsically Disordered Proteins"*  
*MODERATOR: Strategies to Tackle Aggregation problems during Purification*
- 14) *Fifth Annual Protein Purification & Recovery PEPTALK*, The Protein Science week, Palm Spring, California, USA 20/23 January 2013 (Invited for a 180 min course)  
*TALK: Buffer Optimization for Purifying Proteins*
- 15) 4<sup>th</sup> P4EU Meeting IMBC, Porto, Portugal Nov 11-12, 2013 *Talk: Ion exchange: some applications (30 min talk)*
- 16) 4<sup>th</sup> P4EU Meeting IMBC, Porto, Portugal Nov 11-12, 2013 *Talk: Encouraging data publication for reliability assessment (30 min talk)*
- 17) Israel Society for Biotechnology Engineering (ISBE) December 1, 2013, Dan Hotel, Tel-Aviv  
*Talk: How to deal with aggregation problems of IDPs "Intrinsically disorder proteins" and other prone to aggregated proteins (30 min talk)*
- 18) Protein expression and characterization workshop. Weizmann Institute of Science, May 11-12, 2014, *Talk: Production of prone-to-aggregate proteins (30 min talk)*
- 19) CTLS 2014 - Pan-European Core Technologies for Life Science Congress - Institute Pasteur, Paris, France 2- 5 June 2014
- 20) 5<sup>th</sup> P4EU meeting at Institute Pasteur – June 5-6 2014,  
*Talk: Reproducing irreproducible results: A love story for a robust Kinase crystallization (30 min talk)*
- 21) Advisory Board Meeting for the Protein Expression & Purification Facility (SFAB) - Max Planck Institute of Molecular Cell Biology and Genetic - Dresden – GERMANY. July 15-16 2014
- 22) Max Planck Institute of Molecular Cell Biology and Genetic - Dresden – GERMANY July 17<sup>th</sup> 2014.  
*Talk: How to deal with the production of IDPs "Intrinsically disorder proteins" and other prone to aggregated proteins (70 min talk + 120 minutes discussions)*
- 23) PepTalk: The Protein Science Week. Protein Purification and Recovery, Streamlining Processes. 19<sup>th</sup> to 23<sup>rd</sup> January 2015 in San Diego, USA  
*Talk: Reproducing Irreproducible Results: A Case Study for Robust Kinase Crystallization (30 min talk)*
- 24) PepTalk: The Protein Science Week. Protein Purification and Recovery - Streamlining Processes. 19<sup>th</sup> to 23<sup>rd</sup> January 2015 in San Diego, USA  
*Short Course: Protein Purification Strategies: Dealing with Proteins that Are Prone to Aggregate (180 min course)*
- 25) LSU Training course from Wyatt in the use of SEC/MALS & Quasi-Elastic Light Scattering Santa Barbara, USA January 26<sup>th</sup> to 29<sup>th</sup> 2015 (*Participation 3 days course*)
- 26) Immunologic Molecular Center (CIM) La Havana, Cuba, 7<sup>th</sup> to 9<sup>th</sup> April, 2015. - *Protein Purification Course (15 hours course – Three days)*. Participants: 53 profesionales from: Centro de Inmunología Molecular (CIM), Centro de Ingeniería Genética y Biotecnología (CIGB), Instituto Finlay, Centro de Química Biomolecular (CQB), Centro de Investigación y Desarrollo de Medicamentos (CIDEM), Universidad de la Habana & Centro Nacional de Investigaciones Científicas (CNIC)
- 27) 8th P4EU Meeting and Joint session with ARBRE network – organized by the Max Planck Institute of Molecular Cell Biology and Genetic - Dresden – Germany July 17-18<sup>th</sup> 2015

*Talk: Quality control from a protein production perspective (20 min talk)*

- 28) 7<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit - Protein Purification Technologies - Lisbon 11/2015 *Talk: IDPs "Intrinsically disorder proteins", difficult to produce, but with a significant role in cellular pathways. Case studies (30 min talk)*
- 29) 7<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit - Protein Purification Technologies - Lisbon 11/2015 Short Course: *Protein Purification Strategies: Dealing with Proteins that Are Prone to Aggregate (3hr course)*
- 30) 9<sup>th</sup> P4EU Meeting of the European Core Facilities in Protein Production 30<sup>th</sup> November to 1<sup>st</sup> December 2015 in Munich Germany - Max-Planck-Institute of Biochemistry
- 31) P4EU and AEBRF First Joint meeting - *December 1-2, 2015* (Max-Planck-Institute of Biochemistry) Working group Proposal Guidelines on Protein Quality for Biological Experiments. *Coordinator of the group*
- 32) Advanced Methods in Protein Purification - 09-13 May, 2016 - Max-Planck-Institute of Biochemistry - Munich Germany .*Main guest Speaker and Trainer 5 days course (theoretical and practical lab course for post-docs)*
- 33) 12<sup>th</sup> P4EU Meeting—organized by the European Molecular Biology Laboratory (EMBL) - Heidelberg – GERMANY
- 34) P4EU and AEBRF Joint meeting for Protein Quality - 16<sup>th</sup> (evening) June 2016 in Heidelberg Germany - European Molecular Biology Laboratory (EMBL)
- 35) EMBO Course: Protein expression, purification, and characterization (PEPC10) - 12 to 20 September 2016 | Hamburg, Germany. *Guest Speaker and Trainer 10 days course (theoretical and practical lab course for post-docs)*
- 36) 8<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit - Lisbon: *Basic Technologies in a Core Protein Expression Lab: Basic Principles in Protein Purification Strategies. Two days Training Seminar 31/10 to 1/11/2016*
- 37) 8<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit Protein Purification Technologies - Lisbon 3/11/2016 *Talk: Improving the time-efficiency and quality of your results (30 min talk)*
- 38) 8<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit Protein Purification Technologies - Lisbon 3/11/2016 Short Course: *Protein Purification Strategies: Dealing with Proteins that are Prone to Aggregate (3hr course)*
- 39) 8<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit Protein Purification Technologies - Lisbon 4/11/2016 *Talk: Case Study: Human Kinase Crystallization Phosphatase Co-Expression (30 min talk)*
- 40) 13<sup>th</sup> P4EU Meeting—organized by Weizmann Institute of Science, Israel 7/8 Dec 2016 *Column chromatography strategies for Adeno Associated Viruses (AAVs) purification (Hadar Amarteli 30min talk)*
- 41) ILANIT Eilat 20-23/2/2017 In charge of the Early Bird Session: Reproducing Irreproducible Results - What Can We Do For Recombinant Proteins? **Talk: Quality Control of Recombinant Protein: Best Practice Recommendations** (30 min talk)
- 42) 10<sup>th</sup> March 2017 Université libre de Bruxelles Meeting: "Challenges and opportunities in Protein Analytics". *Talk: : "The Protein Purification Facility": case studies in phosphorylation and glycosilation heterogeneity and others (30 min talk)*
- 43) Advanced Methods in Protein Purification - 06-10 November, 2017 - Max-Planck-Institute of Biochemistry - Munich Germany .*Main guest Speaker and Trainer 5 days course (theoretical and practical lab course for Core Facilities personnel from P4EU)*
- 44) 9<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit - Lisbon: *Basic Technologies in a Protein Production Lab. Two days Training Seminar 13/11 to 14/11/2017 (6hr course)*

- 45) 9<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit Protein Purification Technologies - Lisbon 15/11/2016 *Short Course: Protein Purification Strategies: Dealing with Proteins that are Prone to Aggregate (3hr course)*
- 46) 9<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit Protein Purification Technologies - Lisbon 17/11/2017 *Talk: Human Heparanase: Lessons Learned from a Self-Destructing Project (30 min talk)*
- 47) Weizman Inst of Science 2/5/2018 Invited by Tamar Unger from The Protein Production Core Facility *Talk: :A new application of multi angle light scattering coupled to ion-exchange chromatography (IEX-MALS) for protein characterization (60 min talk)*
- 48) 13<sup>rd</sup> P4EU Meeting 4<sup>th</sup> to 5<sup>th</sup> July 2018 in Ghent - VIB, Belgium *Talk: A new application of multi angle light scattering coupled to ion-exchange chromatography (IEX-MALS) for protein characterization (30 min talk)*
- 49) Protein Design & Engineering Conference (Markets and Markets) - Frankfurt, Germany 8th & 9th October, 2018 *Talk: A new application of multi angle light scattering coupled to ion-exchange chromatography (IEX-MALS) for protein characterization (30 min talk)*
- 50) 10<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit - Lisbon: *Basic Technologies in a Protein Production Lab. Two days Training Seminar 12/11 to 13/11/2018 (6hr course)*
- 51) 10<sup>th</sup> PEGS EUROPE Protein & Antibody Engineering Summit – Lisbon - Analytical Characterisation of Biotherapeutics Meeting: *A new application of multi angle light scattering coupled to ion-exchange chromatography (IEX-MALS) for protein characterization 15/11/2018 (30 min talk)*
- 52) 14<sup>th</sup> P4EU Meeting 3<sup>rd</sup> to 4<sup>th</sup> December 2018: *New insights in IEX-MALS, a recent analytical application coupling Ion Exchange Chromatography to Multi Angle Light Scattering (30 min talk)*
- 53) Protein Production & Characterisation: Towards Structural and Functional Biology – WIS 9-10/01/2019 *Hadar Amartely, HUJ High resolution Ion Exchange chromatography (IEX) coupled to Multi Angle Light Scattering (MALS) – A method for protein separation and characterization (30 min talk)*
- 54)

### **Courses in ISRAEL Biotech Companies**

1. January 2009 12hr course organized by Danyel Biotech for different biotech
2. December 2010 12hr course organized by Danyel Biotech for different biotech
3. April 2011 12hr course OMRIX
4. January 2012 12hr course INSIGHT
5. February 2012 12hr course KAMADA
6. March 2012 12hr course organized by Bioforum for different biotech companies
7. December 2012 12hr course SIGMA
8. April 2017 12hr course BTG / FERRING Holding
9. November 2017 12hr course BTG / FERRING Holding

### **MEMBERSHIPS:**

- 1) Active member and one of the founders of P4EU: Protein Production Partnership for Europe. **Executive Board Members since December 2016**
- 2) Member of the recently founded CTLS: Core Technologies for Life Science

