Anat Lerner

CURRICULUM VITAE AND LIST OF PUBLICATIONS

• Education

2003 – 2008	Ph.D. Microbial Physiology, Plant Sciences, Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University. Dissertation: "Characterization and synthesis of exopolysaccharide (EPS) in *Azospirillum brasilense* Sp7". Ph.D. Supervisors: Prof. Yaacov Okon and Dr. Saul Burdman.
2000 – 2003	M.Sc. in Soil Microbial Ecology, Plant Sciences, Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University. Thesis: "The effect of *Azospirillum brasilense* on the bacterial populations in the rhizosphere and rhizoplane-endorhizosphere of *Zea mays* cv. Jubilee". Supervisors: Prof. Yaacov Okon and Prof. Edouard Jurkevitch.
1997 – 2000	B.Sc. in Animal Sciences, Graduated with Honors, Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University.

• Employment History

2013 - Present	Researcher/Ph.D/ Project leader in the field of antibiotic resistance among bacteria Division of Molecular Epidemiology Tel Aviv Sourasky Medical Center
2010 - Present	Lecturer Ono Academic College
2010 – 2013	Postdoctoral fellowship in Human Microbiology/Ph.D/Project leader in a European Consortium in Microbiological Molecular

Epidemiology in the field of carbapenem resistance *Enterobacteriaceae* (CRE) in the human gut and understanding environmental contamination with CRE
Sackler Faculty of Medicine, Tel Aviv University

1998 – 2000 Research Assistant/B.Sc/Green house and field experiments using inoculants of *Azosiprillum brasilense*.
Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University

• **Professional Activities**

(a) Professional academic functions

2007 – 2008 Collaboration Research/ Annotation analysis of the *A. lipoferum* genome
Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University Genome Universite Lyon 1, France and the Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University

2003 – 2004 Collaboration Research /Professional advisory to the Israeli National Police headquarters
Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University The Division of Identification and Forensic Sciences, Toolmarks and Materials Laboratory, Israel National Police Headquarters, Jerusalem, Israel and the Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University

2003-2004 Collaboration Research /Learning the ecology of *A. brasilense* using various fingerprint methods such as DGGE.
Cooperation with the Ecologie Microbienne, Université Claude Bernard, Lyon I, France and the Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University

(b) Significant professional consulting

2010 - Sadhana Forest, Auroville, India - Designed an agricultural system ("compost tea") for the organic farm Sadhana Forest, analyzed the bacterial populations in the system and gave professional advice about future use as inoculants and for the biological control of plant pathogens.

• Educational Activities

(a) Courses taught

Undergraduate Courses

Academic Writing (Ono Academic College)

Cell Biology (Ono Academic College)

General Microbiology (The Hebrew University)

• Awards, Citations, Honors, Fellowships

(a) Honors, Citation Awards

2011 ASM Student and Post Doctoral Fellow Travel Grant – $750.

2008 FEMS Young Scientist Meeting Grant (YSMG) – 500 Euro.

(b) Fellowships

2001 Fellowship for Excellence from The Otto Warburg Minerva Center for Agricultural Biotechnology – 30,000 NIS.

• Publications

(a) Chapters in collective volumes

Valverde, A., Castro-Sowinski, S., Lerner, A., Fibach, S., Matan, O., Burdman, S., Okon, Y. 2008. Exopolysaccharide production and cell aggregation in *Azospirillum brasilense*. F. D. Dakora et al., (eds.). *Biological Nitrogen Fixation: Towards Poverty Alleviation Through Sustainable Agriculture*. Springer Science – pp. 319-320.

(b) Refereed articles and refereed letters in scientific journals

Lerner, A., Adler, A., Abu-Hanna, J., Meitus, I., Navon-Venezia, S., Carmeli, Y. 2013. Methodological and environmental factors affecting the detection of environmental contamination by carbapenem-resistant *Enterobacteriaceae* (CRE). *Journal of Clinical Microbiology* 51:177-181.

Lerner, A*., Romano, J*., Navon-Venezia, S., Edgar, R., Carmeli, Y. 2013. Rectal swabs are suitable for quantifying the carriage load of KPC-producer carbapenem-resistant *Enterobacteriacea* (CRE). *Antimicrobial Agents and Chemotherapy* 57:1474-1479.

Baudoin, E., Lerner, A., Mirza, M. S., El Zemrany, H., Prigent-Combaret, C., Jurkevich, E., Spaepen, S., Vanderleyden, J., Nazaret, S., Okon, Y., Monne-Loccoz, Y. 2010. Effects of *Azospirillum brasilense* PGPR genetically modified with auxin production gene *ipdC* on the diversity of the indigenous microbiota of the wheat rhizosphere. *Research in Microbiology* 161:219-226.

Lerner, A., Valverde, A., Castro-Sowinski, S., Lerner, H., Okon, Y., Burdman, S. 2010. Phenotypic variation in *Azospirillum brasilense* exposed to starvation. *Environmental Microbiology Reports* 2:577–586.

Lerner, A., Castro-Sowinski, S., Lerner, H., Okon, Y., Burdman, S. 2009. Glycogen phosphorylase is involved in stress endurance and biofilm formation in *Azospirillum brasilense* Sp7. *FEMS Microbiology Letters* 300:75-82.

Lerner, A., Castro-Sowinski, S., Valverde, A., Lerner, H., Dror, R., Okon, Y., Burdman, S. 2009. The *Azospirillum brasilense* Sp7 genes *noeJ* and *noeL* are involved in polysaccharides biosynthesis. *Microbiology* 155:4058-4068.

Lerner, A., Burdman, S., Okon, Y. 2009. The *wzm* gene located in the pRhico

plasmid of *Azospirillum brasilense* Sp7 is involved in lipopolysaccharide synthesis. *Microbiology* 155:791-804.

Lerner, A., Herschkovitz, Y., Baudoin, E., Nazaret, S., Moenne-Loccoz, Y., Okon, Y., Jurkevitch, E. 2006. Effect of *Azospirillum brasilense* inoculation on rhizobacterial communities analyzed by denaturing gradient gel electrophoresis and automated ribosomal intergenic spacer analysis. *Soil Biology and Biochemistry* 38:1212-1218.

Lerner, A., Shor, Y., Vinokurov, A., Okon, Y., Jurkevitch E. 2006. Can denaturing gradient gel electrophoresis (DGGE) analysis of amplified 16S rDNA of soil bacterial populations be used in forensic investigations? *Soil Biology and Biochemistry* 38:1188-1192.

Herschkovitz, Y*., Lerner, A*., Davidov, Y., Rothballer, M., Hartmann, A., Okon, Y., Jurkevitch, E. 2005. Inoculation with the plant-growth-promoting rhizobacterium *Azospirillum brasilense* causes little disturbance in the rhizosphere and rhizoplane of maize (*Zea mays*). *Microbial Ecology* 50:277-288.

Herschkovitz, Y., Lerner, A., Davidov, Y., Okon, Y., Jurkevitch, E. 2005. *Azospirillum brasilense* does not affect population structure of specific rhizobacterial communities of inoculated maize (*Zea mays*). *Environmental Microbiology* 7:1847-1852.

• Lectures and Presentations at Meetings and Invited Seminars

(a) <u>Presentation of papers at conferences/meetings (oral or poster)</u>

Lerner, A., Adler, A., Abu-Hanna, J., Meitus, I., Navon-Venezia, S., Carmeli, Y. February 2012. Environmental spread of carbapenem-resistant *Enterobacteriaceae* (CRE) by patients known to be colonized with CRE.

ISM 2012 Annual Meeting - Bar-Ilan University, Israel. (Poster presentation) P-4.

Lerner, A., Adler, A., Abu-Hanna, J., Meitus, I., Navon-Venezia, S., Carmeli, Y. September 2011. Environmental spread of carbapenem-resistant *Enterobacteriaceae* (CRE) by patients known to be colonized with CRE. 51st ICAAC Interscience Conference on Antimicrobial Agents and Chemotherapy - Chicago, IL, United States. (Oral presentation). K-1126.

Lerner, A., Burdman, S., Okon, Y. November-December 2008. Phenotype characterization of *Azospirilum brasilense* Sp7 ABC transporter (*wzm*) mutant. Congress Biotechnology Havana 2008: AgBiotechnology: facing huge challenges with new approaches. Havana, Cuba. (Poster presentation). S10-P8.

Lerner, A., Valverde, A., Okon, Y., Burdman, S. November-December 2008. Phase variation in wild type and mutant strains of *Azospirillum brasilense*. Congress Biotechnology Havana 2008: AgBiotechnology: facing huge challenges with new approaches. Havana, Cuba. (Oral presentation). S10-2.

Lerner, A., Burdman, S., Okon, Y. August-September 2008. Phenotype characterization of *Azospirilum brasilense* Sp7 ABC transporter (*wzm*) mutant. The 8th European Nitrogen Fixation Conference. Ghent, Belgium. (Poster presentation). PS2-2.

Lerner, A., Burdman, S., Okon, Y. April 2008. Phenotype characterization of *Azospirilum brasilense* Sp7 ABC transporter (*wzm*) mutant. ISM 2008 Annual Meeting. Rehovot, Israel. (Poster presentation).

Lerner, A., Burdman, S., Okon, Y. January 2008. Phenotype characterization of *Azospirilum brasilense* Sp7 ABC transporter (*wzm*) mutant. The 5th Congress of the Federation of the Israel Societies for Experimental Biology (FISEB) 2008. Eilat, Israel. (Poster presentation).

Lerner, A., Herschkovitz, Y., Okon, Y., Jurkevitch, E. February 2005. Spatial and temporal analysis of maize (*Zea mays*) roots following inoculation with the plant growth promoting rhizobacteria *Azospirillum brasilense*. The 4th Congress of the Federation of the Israel Societies for Experimental Biology. (FISEB) 2005. Eilat, Israel. (Poster presentation).

Herschkovitz, Y., Lerner, A., Okon, Y., Jurkevitch, E. February 2005. "No news is good news": inoculation of maize (*Zea mays*) with *Azospirillum brasilense* does not effect rhizosphere and rhizoplane bacterial populations. The 4th Congress of the Federation of the Israel Societies for Experimental Biology (FISEB) 2005. Eilat, Israel. (Poster presentation).

Lerner, A., Herschkovitz, Y., Okon, Y., Jurkevitch, E. September 2004. Inoculation with the plant growth promoting rhizobacterium *Azospirillum brasilense* causes little disturbance in the rhizosphere and rhizoplane of maize (*Zea Mays*). Rhizosphere 2004-Perspectives and challenges- A tribute to Lorenz Hiltner. Munich, Germany. (Poster presentation).

Lerner, A., Herschkovitz, Y., Jurkevitch, E., Okon, Y. September 2003. Influence of the PGPR *Azospirillum brasilense* on rhizosphere and rhizoplane-endorhizosphere microbial populations in inoculated *Zea mays* cv. Jubilee. Ecological and Environmental Biosafety Assessment of Novel Plant and Microbial Biotechnology Products (ECO-SAFE) Final Plenary Meeting. University College Cork, Ireland. (Poster presentation).

Herschkovitz, Y., Lerner, A., Okon, Y., Jurkevitch, E. September 2002. Molecular microbial ecology of bacterial populations in the rhizosphere of maize (*Zea mays*) as affected by *Azospirillum* inoculation. The 5th European Nitrogen Fixation Conference. Norwich, UK. (Poster presentation).

Herschkovitz, Y., Lerner, A., Okon, Y., Jurkevitch, E. September 2002. Molecular microbial ecology of bacterial populations in the rhizosphere of maize (*Zea mays*) as affected *by Azospirillum brasilense* inoculation. The 9th International Symposium on Nitrogen Fixation with Non-Legumes. Leuven,

Belgium. (Poster presentation).

Herschkovitz, Y., Lerner, A., Kadouri, D., Okon, Y., Dessaux, Y., Spencer, B., Jurkevitch, E. June 2002. Distribution dynamics and influence of the PGPR *Azospirillum brasilense* on rhizosphere microbial populations in inoculated maize analyzed by fluorescence microscopy, DGGE and flow cytometry. The 7th Symposium on Bacterial Genetics and Ecology. Bergen, Norway. (Poster presentation).

• **Present Academic Activities**

(a) Submitted for publication

Spread of KPC-producing carbapenem-resistant *Enterobacteriaceae*: The importance of super-spreaders and rectal KPC concentration. Submitted for publication (*Plos Pathogens*).

The use of *tuf* and *rpoA* genes for the quantification of specific gut bacterial populations using quantitative real time PCR. In preparation.

(b) Research in progress

Carmeli, Y., Navon-Venezia, S., Barnea., Y., Kuzmenko, B., Rachi, E. Understanding the effect of several antibiotics on sternitis and mediastinitis caused by MRSA after cardiac surgery. End of 2014.

• **Volunteering and Contribution to the Community**

I am currently volunteering at the Tel Aviv Center of The Association of Rape Crisis Centers in Israel.