Lydia-MariE Joubert Curriculum Vitae

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| BIOGRAPHY | Last Name | Joubert (nee Oosthuizen) |
|  | First Name | Lydia-Marie |
|  | Citizenship | United States of America and South-Africa (dual) |
|  | Languages | English and Afrikaans (fluent), German (read & write) |
|  | Contact Details | 24 Du Clair St  Stellenbosch  +27 (63) 274 9252  [lydiaj@sun.ac.za.edu](mailto:lydiaj@sun.ac.za.edu) / [lydiaj@stanford.edu](mailto:lydiaj@stanford.edu) |
|  | Current Position | Associate Professor of Microbiology and  Head: Electron Microscopy Unit  Central Analytical Facilities  Stellenbosch University  7602 MATIELAND  ([www.sun.ac.za/english/faculty/science/CAF](http://www.sun.ac.za/english/faculty/science/CAF)) |
| EDUCATION | PhD (cum laude) | Dissertation: A study of secretion by the glandular hairs of *Pelargonium radens* (1986) Indiana University, Bloomington IN, USA, with University of Pretoria, SA. |
|  | MPhil Ed (cum laude) | Enhancing the quality of Biology Teaching in Higher Education (2002)  Stellenbosch University, SA |
|  | MSc (cum laude) | Ultrastructure and initiation factors of trichomes of *Pelargonium scabrum* (1983)  Stellenbosch University, SA |
|  | Hons BSc (cum laude) | Taxonomic value of trichomes of *Pelargonium.* (1980)  Stellenbosch University, SA |
|  | BSc (cum laude) | Majoring in Mathematics & Botany (1979)  Stellenbosch University, SA |
|  | Gr 12 (Valedictorian) | Outeniqua High School, George, South Africa (1976) |
| RESEARCH | ELECTRON MICROSCOPY | **3D-SEM: Serial Section Scanning Electron Microscopy (SS-SEM)** and **Array Tomography (AT)**: 3D Reconstruction of ultrastructural EM data. Develop high-resolution SEM techniques applying FESEM to serial ultrathin sections of resin-embedded biological samples collected on conductive substrates, including heavy metal contrasting and immunolocalization. Apply segmentation and 3D reconstruction of data using Fiji TrakEM2.  **CLEM**: Correlative Light and Electron Microscopy: Develop techniques including freeze substitution and low temperature resins, to retain antigenicity and fluorescence from Light to EM. Continue to 3D using Array Tomography. Bench to Computation.  **LBF-SEM**: Large Block-Face SEM for ultrastructural analysis and 3D reconstruction of large tissue samples through FESEM. *En bloc* staining and post-staining techniques, as well as various software approaches are applied.  **FIB-SEM**: Apply Focused Ion Beam (FIB)-SEM to collect volumes of ultrastructural data of non-biological structures associated with, and penetrating, biological tissues.  **CLARITY EM**: Optimization of EM techniques for ultrastructural analysis of optically cleared brain samples, including molecular tagging using APEX2.  **Variable-Pressure SEM Applications**: Develop novel techniques to visualize hydrated specimens including microbial biofilms, protein scaffolds, biomaterials with stem cells and nanoparticles using Variable Pressure SEM. |
|  | BIOFILMS | Morphogenesis: Bacterial, yeast and complex biofilms, including protists, from natural and engineered systems. Application of molecular probes for microscopic analysis, and fractal analysis for analysis of growth patterns.  Bio-Energy: Applying bacterial and fungal enzymes for lignocellulolytic degradation of biomass to fermentable sugars and bio-energy sources (ethanol, butanol, propanol) used in acid mine drainage, bioremediation and cattle feed products. |
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|  | SYNCHROTRON BASED ANALYTICAL IMAGING USING MICRO X-RAY FLUORESCENCE | **Technology development** to identify elements needed for successful colonization of *Helicobacter pylori* on human gastric mucosal cells. Micro-X-ray Fluorescence imaging at SLAC (SSRL) and Argonne (APS), integrated with nanogold-immunolocalization and SEM visualization. |
|  | OPTICAL APPARATUS | Optical Large Area Photometer (OLAPH) for Real-time monitoring of microbial biofilm development - see Saftic et al. 2005. German Patent 19947651. |
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| CAREER | 2006 - current | Electron Microscopist and Sr. Research Professional at Cell Sciences Imaging Facility (CSIF), Beckman Center, Stanford University. Manager of EM core, responsible for SEM related research projects, technique development, training and consultation, Microbiology related TEM projects, and management of an ongoing kidney stereology project involving TEM and LM analysis. 3D SEM technique development and computation, as well as Correlative Light and EM techniques are major interests. |
| 2004 - 2006 | Group leader and Consortium member for BioPAD (www.biopad.org.za) Biotechnology Project, titled “The production and utilization of bio-energy sources for the reduction of sulphate in industrial and mining waste waters”. Three laboratories from the University of Stellenbosch, and the Council for Scientific and Industrial Research were involved in designing an integrated process for biological treatment of acid mine drainage in which carbon and energy requirements of the sulphate removal process are derived by microbial degradation of plant biomass. Fungal pretreatment for improved digestibility of biowaste further degraded by natural microbial consortia were investigated, as well as recombinant yeasts applied to cellulose precursors. |
|  | 2002 - 2004 | Claude Leon Research Fellow in Environmental Microbiology with prof. Gideon Wolfaardt, Stellenbosch University, SA. Application of lignocellulolytic consortia for bioenergy production, and wetlands for biodegradation of winery wastewater. Research involved ecological aspects of antimicrobial resistance in microbial biofilms, with emphasis on developing assaying techniques and apparatus to determine microbial behaviour in planktonic and attached lifestyles. Explored various visualization (FISH, GFP), image analysis and molecular techniques for community analyses (tRFLP). Responsibilities included all imaging support (light, fluorescence and electron microscopy) in the Microbiology Department. |
|  | 2001 | Research Leader on SA Innovation Fund Project 42311: “Production in Fungi of enzymes used in Animal Feeds”. Research involved application of native and recombinant fungal enzymes with lignocellulolytic activities as food additives in animal feeds, maximizing energy gain from forage cell walls. Responsibilities included lab set-up and management, and troubleshooting colorimetric and spectrophotometric protocols for quantification of enzyme activity on natural carbon sources. PI: Prof. Bernard Prior. |
|  | 2001 | Coordinator for new Biology Programs at the University of Stellenbosch, South Africa |
|  | 1987 | Lecturer in Microscopy Techniques and Plant Sciences, University of Stellenbosch, |
|  | 1986 - 1987 | Postdoctoral position in Plant Physiology group of prof. Nathaniel Grobbelaar, University of Pretoria. Research involved EM investigation of symbiotic behaviour of *Cyanobacteria* in collaroid roots of *Encephalartos* spp. |
|  | 1986 | Obtained PhD (University of Pretoria, SA, with Indiana University, Bloomington, IN USA) in Plant Sciences. Supervisor prof. Jan Coetzee, Director Electron Microscope Unit, UP, SA with prof Paul Mahlberg, Plant Sciences, IU. Focused on techniques of light microscopy, SEM and TEM, including Autoradiography and Gas-Liquid Chromatography, for localization of biochemical pathways of monoterpene biosynthesis. Histochemistry of specialized oil producing cells was characterized. |
| AWARDS &  SCHOLARSHIPS | 2013 | Winner International Science and Engineering Visualization Challenge (SciVis) Illustration Category, See Science 343:599-610(2014). |
| 2009 | MSA (Microscopy Society of America) Professional Staff Technologist Award for  Visualization of Hydrogels with VP-SEM. |
| 2003 | Honorary Stipendium after completion of MPhil for highest postgraduate achievement in Life Sciences and Education, University of Stellenbosch, SA |
|  | 2002 - 2004 | Prestigious Postdoctoral Fellowship awarded by the Claude Harris Leon Foundation, for Biofilm research at University Stellenbosch, SA.  http://www.leonfoundation.co.za/ |
|  | 2001 – 2002 | Merit Award for MPhil studies, University of Stellenbosch, SA. |
|  | 1983 – 1986 | CSIR Merit Award and Scholarship for Doctoral (PhD) studies. |
|  | 1984 - 1985 | Croll Memorial Stipendium, University Stellenbosch for Doctoral studies |
|  | 1978-1980 | Shell Scholarship for undergraduate BSc studies. |
|  | 1980-1981 | Weizmann Insitute, Rehovot, Israel, exchange student in  lab of prof Dan Atsmon, Plant Genetics. |
|  | 1978 – 1979 | Highest Interfaculty Academic Performance for Second-year Student at University Stellenbosch. |
|  | 1979 | Merit Award for Academic, Sport and Cultural performance. |
|  | 1977-1980 | Merit Award Department of Education (Dux Scholar)  Merit Scholarship Outeniqua High School, George, SA. |
|  | 1977-1979 | Top performer in Mathematics and Botany, University of Stellenbosch |
|  | 1976 | President’s Award for Youth Leadership  Finalist in National Mathematics Olympiad |

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| COLLABORATION  & CONSULTATION | Prof Karl Deisseroth, SNI and PhD candidate Ariane Tom: EM Visualization of CLARITY brain samples. Serial Section Array Tomography and 3D-SEM analysis are explored. ATUM and SBF-SEM are in process. |
|  | Prof Lynette Cegelski, Stanford Chemistry Dept, and Dr Jose Ferreira, CIMR visiting scholar from Brazil: studying the role of microbial biofilms in the progression of lung disease in Cystic Fibrosis patients. |
|  | Prof. Jayakar Nayak with Dr Dawn Bravo, Stanford Dept Otolaryngology: Large-scale 2D and 3D-SEM techniques to study novel cell types in the respiratory area of the nasal cavity. |
| Prof Ngan Huang, Cardiothoracic Surgery, Stanford and Dr Michael Paukshto, Fibralign: EM visualization of the effect of biomechamical and biophysical cues of stem cell differentiation on biomaterials and extracellular proteins. |
| Prof Manuel Amieva, Stanford Dept Microbiology/Immunology: Attachment features of *Helicobacter pylori* |
| Dr Kent McDonald, UC Berkeley: Applying novel and revisited cryo and embedding techniques for rapid EM processing of cellular and tissue samples for CLEM (Correlative Light en EM imaging). We also investigate novel Ionic Liquid applications for biological SEM analysis. |
|  | Dr Francesca Santoro and Prof Bianxiao Cui: Develop protocols for 3D Focused Ion Beam (FIB)-SEM (abrasion and imaging), segmentation and 3D reconstruction of cell-nanopillar interfaces at ultrastructural level. |
|  | Drs Barry Lai and Sefan Vogt, APS Argonne, and Dr. Sam Webb, SSRL, SLAC: Exploring microbeam X-ray Fluorescence as appropriate technology to determine micronutrients in *Helicobacer pylori*. Develop immunogold SEM techniques for localization of bacterial microcolonies. |
|  | Dr Jay Rajadas, BioADD Core, Stanford: Biomaterials and hydrogel scaffolds for dermal substitution and novel nanoparticle drug delivery. |
|  | Prof. Paul Weimer, University of Wisconsin, Madison, USA : Microscopical localization and functioning of attached rumen bacteria; collaborating on lignocellulose degradation via microbial enzymes. |
| BOOK CHAPTER  PEER REVIEWED PUBLICATIONS | **Joubert, L-M.** 2017. Variable Pressure-SEM: a versatile tool for visualization of hydrated and non-conductive specimens. Microscopy and imaging science: practical approached to applied research and education. A. Mendez-Vilas (Ed.). Formatex Research Center.  Bester, E., Wolfaardt, G., **Joubert, L**., Garny, K. and Saftic, S. 2005. Planktonic cell yield by a pseudomonad biofilm Appl Environ Microbiol 71: 7792-7798.  Chandra, A., **Joubert, L-M**, Bhaya, D. 2015. **cAMP regulates a novel Chaperone-Usher system and phenotypic plasticity of Type IV pili in Synechocystis sp. Submitted to Nature Microbiology.**  Du Plessis, K.R., Botha, A., **Joubert, L**., Bester, R., Conradie, W.J. and Wolfaardt, G.M. 2005. Response of the  microbial community to copper oxychloride in acidic sandy loam soil. Jnl Appl Microbiol 98:901-909.  Du Plessis, K.R., Wolfaardt, G.and **Joubert, L.M.** 2008. Microbial dynamics in constructed wetlands used for  treating distillery wastewater. Winelands 2008. Farnebo S, Woon CY, Schmidt TT, Joubert et al. 2014. Design and characterization of an injectable tendon hydrogel: a novel scaffold for guided tissue regeneration in the musculoskeletal system. Tissue Eng Part A 20(9-10):1550-61 Greben, H., **Joubert, L-M**., Tjatji, M., Whites, H. and Botha, A. 2007. Biological nitrate removal from synthetic wastewater using a fungal consortium in one stage bioreactors. Water SA 33: 285-290.  Hayer,A., Shao,L., Chung, M., **Joubert, L-M**., Yang, H.W.,Tsai, F-C., Bisaria, A., Betzig, E., Meyer, T. (2016) Engulfed cadherin fingers are polarized junctional structures between collectively migrating endothelial cells. Nature Cell Biol. 18: 1311-1323. doi:10.1038/ncb3438  Howitt, M, J.Lee, P Lersethtakarn, R Vogelman, **L-M Joubert**, K Otteman and M Amieva. 2011. ChePep controls *Helicobacter pylori* infection of the gastric glands and chemotaxis in the Epsilonproteobacteria. [mBio Aug 2011. doi:10.1128/mBio.00098-11](http://mbio.asm.org/content/2/4/e00098-11.executive-summary" \t "_blank),  Jiang, X., Malkovskiy, A., Tian, W., Sung, YK, Sun, W, Hau, JL, Manickam, S, Wagh, D, **Joubert, LM**, Semenza, G, Rajadas, J, Nicolls, MR. 2014. Promotion of airway anastomotic microvascular regeneration and alleviation of airway ischemia by deferoxamine nanparticles. Biomaterials 35(2), 803-813.  **Joubert, L**. 2013. High-resolution imaging with field-emission SEM: the need for downstream plasma cleaning in biological applications. Microsocopy and Analysis May: 15-20  **Joubert, L.** 2012. VP-SEM: Unsung Hero of SEM Imaging. Application of VP-SEM to beat Visualization challenges. Imaging and Microscopy 4/2012.  **Joubert, L-M,** Ferreira JAG, Stevens DA, Nazik H, Cegelski L. 2016. Visualization of *Aspergillus fumigatus* Biofilms with Scanning Electron Microscopy and Variable Pressure-Scanning Electron Microscopy: a Comparison of Processing Techniques.Journal of Microbiological Methods 132: 46-55. doi: 10.1016/j.mimet.2016.11.002  **Joubert, L- M.** Amieva, S.Tan, S.Webb and B.Lai. Correlation of X-ray Microbeam analysis with Scanning Elecron Microscopic observations in *Helicobacter pylori*. (in preparation)  **Joubert, L.,** Botha, A. & Wolfaardt, G.M. 2003**.** Feeding relationships in yeast- ciliate biofilms. In  *Biofilm Communities: Order from Chaos?*, pp. 409-414. McBain AJ, Allison DG, et al. (eds). Cardiff: BioLine.  **Joubert, L-M**., Wolfaardt, G., Botha, A. 2006. Microbial exopolymers link predator and prey in a model yeast biofilm system. Microbial Ecology 52(2): 187-197.  **Joubert, L-M,** Atmodjo, DY, Vose, JG. 2009. Evaluation of safety and efficacy of the PEAK plasmablade for thoracic artery mobilization in a porcine model compared to standard electrosurgery and harmonic scalpel. Technical report.  Kim J.J. 2017. Microfibrous Scaffolds Enhance Endothelial Differentiation and Organization of Induced Pluripotent Stem Cells. Cellular and Molecular Bioengineering 10(5). Aug 2017 DOI: 10.1007/s12195-017-0502-y  Lappas, P, McCartt, AD, Strand, C, Gates, SD, Davidson, DF, Jeffires, JB, Hanson, RK, **Joubert, LM**, Hokama, L, , Mortelmans, K. 2008. Dispersion, activation, and destruction of airborne biologica threats: laboratory studies of the interaction of spore-laden aerosols with shock/blast waves. Chemical and Biological Defense Physical Science and Tecnology Conference. New Orleans Nov17-21. Li, Y. et al. 2017. Atomic structure of sensitive battery materials and interfaces revealed by cryo–electron microscopy. Science 358, Issue 6362, pp. 506-510 DOI: 10.1126/science.aam6014 Long C, Galvez MG, Legrand A, Joubert LM et al. 2017. Intratendinous Injection of Hydrogel for Reseeding Decellularized Human Flexor Tendons. [*Plastic and Reconstructive Surgery,* 139(6):1305e–1314e](https://insights.ovid.com/pubmed?pmid=28538572), JUN 2017 DOI: 10.1097/PRS.0000000000003359 Margolis, JJ., S. El-Etr, L-M Joubert, E. Moore, R.Robison, A. Raley, A. Spormann & D. Monack. 2009. *Francisella tularensis subspecies* novicida chitinases and sec secretion system contribute contribute to bofilm formation on chitin. AEM 76(2): 596-608 <http://aem.asm.org/cgi/content/short/76/2/596> Margulis K, Zhang X, **Joubert L-M**, Bruening K, Christopher J. 2017. Formation of Polymeric Nanocubes by self-assembly of crystallization of ditiolane-containing triblock copolymers. Angew Chem. 56(51): 16357-16362 doi: 10.1002/anie.201709564.  McCartt, A, Gates, S, Jeffries, J., Hanson, R., **Joubert, L,** Buhr, T. 2011. Response of Bacillus thuringiensis Al Hakam endospores to gas dynamic heating in a shock tube. Zeitschrift fur Physikalische Chemie 225:1367-1377.  Nakayama, KH, Joshi, PA, Lai, ES, Gujar, P, **Joubert, L-M**, Fuller, GG, Huang, NF. 2015. Bi-layered vascular graft derived from human induced pluripotent stem cells with biomimetic strucure and function. Regen Med Oct 2015 <http://www.futuremedicine.com/doi/abs/10.2217/rme.15.45>  Nazik, H, **Joubert, L-M**, et al. 2017. Pseudomonas-phage inhibition of *Candida albicans*. Microbiology doi: [10.1099/mic.0.000539](http://dx.doi.org/10.1099/mic.0.000539)  Neofytou, EA, Chang, E, Patlola, B., **Joubert, L-M**, et al. Adipose tissue-derived stem cells display a progiogenic phenotypr on 3D scaffolds. [Jnl Biomedical Materials Res Part A, Vol98A, 3:383-393](http://www.ncbi.nlm.nih.gov/pubmed/21630430" \t "_blank)  Peng, K., Broz, P, Jones, J, **Joubert, L-M**, Monack, D. 2011. Elevated AIM2-mediated pyroptosis triggered by hypercytotoxic Francisella mutant strains is attributed to increased intracellular bacteriolysis. Cellular Microbiology 13(10): 1586-1600.  Ronaghi M, Nasr M,  Ealy, Durruthy-Durruthy R, Waldhaus J, Diaz G H., **Joubert L-M**, Oshima K and Heller S. 2014. Inner ear Hair-Like cells form Human Embryonic Stem cells. Stem Cells and Development.  [doi:10.1089/scd.2014.0033.](http://online.liebertpub.com/doi/abs/10.1089/scd.2014.0033)  Saftic, S., **Joubert**, **L-M.,** Bester, E. and Wolfaardt, G.M. 2004. A biofilm apparatus for the teaching lab. ASM  Focus on Microbiology Education 11:12-14.  Santoro F., Zhao W., **Joubert L-M**, et al. Revealing the Cell-Material interface with nanometer resolution by focused Ion Beam/Scanning Electron Microsocopy. ACS Nano 2017 Aug 22:11(8): 8320-8328. 10.1021/acsnano.7b03494  Shudo Y, Cohen JE, Goldstone AB, MacArthur JW, Patel J, Edwards BB, Hopkins MS, Steele AN, **Joubert L-M**, et al. 2015. Transdifferentiation of Mesenchymal Stem Cell into Smooth Muscle Cell Lineage; Utility for Clinical Application From Isolation to Creation of Cell-Sheet. Cytotherapy 18(4):510-7.  Ramachandran,N., **Joubert, L.,** Gundlapalli, S.B,, Cordero Otero, R.R and Pretorius I.S. 2008.Effect of flocculation on the efficiency of raw-starch fermentation by *Saccharomyces cerevisiae* expressing *Lipomyces kononenkoae* LKA1 encoded α-amylase. Annals Microbiology 58(1): 99-108.  Reicchardt, C., Ferreira, JAG, **Joubert, L-M**, Clemons, KV, Stevens, DA, Cegelski, L. 2015. Analysis of the Aspergillus fumigatus biofim extracellular matrix by solid-state nuclear magnetic resonance. Eukaryot. Cell. 2015 Jul 10. Pii: EC.00050-15. [Epub.ahead of print].  Reichelt, M., **Joubert, L-M**., et al, A.M. 2012. Three-dimensional Reconstruction of Herpesvirus Infected Cell Nuclei and PML Nuclear Cages by Serial Section Array Scanning Electron Microscopy and Electron Tomography. PLoS Pathog 8(6): e1002740. doi:10.1371/journal.ppat.1002740.  Weimer, P.J., Price, N., Kroukamp, O., **Joubert, L-M.,** Wolfaardt, G.M. and Van Zyl, W.H. 2006. Characterization of the extracellular glycocalyx of the anaerobic cellulolytic bacterium *Ruminococcus albus 7.* Appl Environ Microbiol 72(12):7559-7566. |
| CONFERENCES | Bester, E., **Joubert, L-M.** and Wolfaardt, G.M. 2003. Response of biofilm and planktonic bacterial populations to antimocrobial treatment. IWA Conference, Cape Town, South Africa.  Bester, E., **Joubert, L-M.** and Wolfaardt, G.M. 2004. The effect of growth rates on the antimicrobial susceptibility of biofilm and planktonic communities. SAMS Conference, Stellenbosch, South Africa.  Botha, A. Rhode, O., Samson, H., **Joubert, L-M**. and Wolfaardt, G.M. 2003. Interactions of *Cryptococcus laurentii* and *Cryptococcus podzolicus* in low nutrient conditions***.*** ISSY Conference, Budhapest, Hungary.  Botha, A., Botes, A., **Joubert, L**. & Boekhout, T. 2005. Natural habitats of *Cryptococcus neoformans*. Medical Mycology Conference, Hartenbosch, SA  Garny, K., **Joubert, L-M.** and Wolfaardt, G.M. 2003. Influence of nutrient source and biocide  treatment on a mixed species biofilm community. IWA Conference, Cape Town, South Africa.  Garny, K., **Joubert, L-M**. and Wolfaardt, G.M. 2004. Biofilm antimicrobial susceptibility under  different nutrient conditions. SAMS Conference, Stellenbosch, South Africa.  Greben H.A., Baloyi J., Botha A. and **Joubert, L.-M.** 2005. Sustainable biological mine water treatment utilizing garden biowaste as the carbon and energy source. WISA 2006, Cape Town, SA  Hayer, A., Shao, L., **Joubert, L-M**. Tsai, F-C, Betzig,E, Meyer, T. 2013. Asymmetric adherens junctions as guidance signals for collective endothelial cell migration. Gordon Conference on Cell Migration. Jan 2013.  **Joubert, L-M**, McDonald, K. 2016. SEM Visualization of Biological Samples using Hitachi Ionic Liquid HILEM IL 1000: a Comparative Study. Microsc. Microanal. 22(S3), pp. 1170–1171. doi: 10.1017/S1431927616006693.  Joubert, L-M, Ferreira, JAG, Stevens, DA & Cegelski, L. 2015. *Aspergillus fumigatus* Biofilms: a Comparison of Processing Techniques for Scanning Electron Microscopy of Fungal Mycelium and Extracellular Matrix.  Microscopy and Microanalaysis, Portland OR, Aug 2015.  **Joubert, L-M**., Bravo, D. & Nayak, J.V. 2013. Looking down the nose through Large Block-Face (2D) and Serial Section Array (3D) Scanning Electron Microscopy. Microscopy and Microanalaysis, Indianapolis, IN, Aug 2013.  **Joubert, L-M**. 2012. Variable Pressure Scanning Electron Microscopy: Dark Horse of EM imaging. Microscopy and Microanalysis, Phoenix, AZ, Jul 2012.  **Joubert, L-M.,** Amieva, M., Lai, B. 2011. Correlative micro-XRF and SEM analysis of micronutrient requirements in *Helicobacter pylori.* Gordon Conference on X-ray Science, Waterville, ME, Aug 2011.  **Joubert, L-M**., Amieva, M., Tan, S., Webb, S., Lai, B. 2010. To Infinity and Beyond: SEM to X-ray Fluorescence Imaging to determine Micronutrients in *Helicobacter pylori*. Microscopy and Microanalysis, Portland OR, Aug 2010.  **Joubert, L-M.** 2010. Scanning Electron Microscopy: Bridging the Gap from Stem Cells to Hydrogels. Microscopy and Microanalysis, Portland OR, Aug 2010.  **Joubert, L-M.** 2009. Visualization of Hydrogels with Variable-Pressure SEM. Microscopy and Microanalysis. Richmond, VA, Aug 2009.  **Joubert, L-M**. 2003. The Rabbits of Sherwood forest, the Coastline of Britain and the Beautiful  Mind: Chaos, Fractals and Games theory in Biofilms. Annual Microbiology Research Meeting, Stellenbosch.  **Joubert, L-M**. 2004. The secret is in the sauce : protistan behaviour in complex biofilms. Annual  Microbiology Research Meeting, Stellenbosch.  **Joubert, L-M**., Botha, A. and Wolfaardt, G.M. 2003. Associations in complex biofilms. IWA, Cape Town, SA  **Joubert, L-M**. 2002. Enhancing first-year biology teaching at the University of Stellenbosch.  US Education Research Conference, Stellenbosch, SA.  **Joubert, L-M**. and Wolfaardt, G. 2006. Application of VP-SEM for studying biofilms.Podium presentation for session: Electron Microscopy as a 21st Century tool. Experimental Biology Conference, Moscone Centre, San Francisco, USA  **Joubert, L-M**., Wolfaardt, G. and Botha, A. 2006. In situ fluorescent staining of yeast biofilms. Experimental Biology Conference, Moscone Centre, San Francisco, USA  **Joubert, L-M**. and Wolfaardt, G. 2006. Yeast biofilms: Real-time monitoring and visualization of mono- and dual species biofilms. Biofilms 2006, Leipzig, Germany.  **Joubert, L-M** and Wolfaardt, G.M. 2006. Integration of VP-SEM as experimental approach in studying biofilms. CSM conference, London, Ontario, Canada.  **Joubert, L-M**, Wolfaardt, G.M, Botha, A. and Saftic, S. 2006. Visualization and real-time monitoring of yeast  biofilms. CSM Conference, London, Ontario, Canada  **Joubert, L-M,** Wolfaardt, G.M. and Du Plessis, K. 2006. Focusing on environmental biofilms with Variable Pressure SEM. AGU conference, Moscone Centre, San Francisco, Dec 2006  **Joubert, L-M** and Ward, D. 2007. Teaching statistic to freshman Microbiology students: How do we do Biology? ASM Conference, Toronto, Canada, June 2007.  **Joubert, L-M,** Wolfaardt, G.M. and Du Plessis, K. 2007. Wetlands for Wastewater: a visual approach to microbial dynamics. AGU conference, Moscone Centre, San Francisco, Dec 2007.  Paukshto, M., Marin, G., McCurtry, D., Zaitseva,T., Bobrov,Y., **Joubert, L.,** Anthony, J. 2011. Tissue-like collagen scaffolds for tissue repair and cell delivery. Gordon Conference on Collagen, New London, NH, Jul 2011.  Ramachandran, N., **Joubert, L-M**., Pretorius, I.S. and Cordero Otero R.R. 2004. Effect of flocculation on raw starch fermentation by *Saccharomyces cerevisiae* whole cell biocatalysts expressing LKA1 α-amylase. SAMS, SA,  Santoro, F., Wenting, Z, Joubert, L-M, Bianxiao Cui. 2016. Pushing scanning electron microscopy to the limit for cell-nanopillar investigation. Submitted for RMS Spring Meeting, SM4 Engineering Biointerfaces with Biomaterials.  Wolfaardt, G.M., **Joubert, L-M.,** Bester, E., Garny, K. and Botha, A. 2004. Interactions and differentiation in  complex biofilm communities. SAMS Conference, Stellenbosch, South Africa (opening lecture by GMW).  Wolfaardt, G.M., Gardner, M., Kroukamp, O., Du Plessis, K., Botha, A., **Joubert, L**. 2007. Plasticity: microbial adaptation that surpasses boundaries of the biofilm model. ASM Conference, Toronto Canada, June 2007.  Weimer, P.J., Kroukamp, O., **Joubert, L-M.,** Wolfaardt, G.M. and Van Zyl, W.H. 2004. Characterization of the Glycocalyx of Cellulose-Grown *Ruminococcus albus*. ASM Conference, New Orleans, USA.  Zaitseva, T., G. Martin, L. Teracio, N. Tyhovych, P.Loomer, T.Desai, L.Peng, **L.Joubert,** D.McMurtry, , M. Paukshto. 2009. Behavior of cells on tissue-like collagen matrices. American Society of Cell Biology Conference, San Diego. |
| INVITED SPEAKER | **Joubert, L-M.** 2016. The CLEM Journey: Dynamics to Context. Correlative Microscopy platform launch at University Stellenbosch, South Africa.  **Joubert, L-M.** 2016. The Agony and the Ecstasy: Correlative Microscopy from Photons to Electrons and X-Rays. Lessons from Recent Case Studies. Microscopy and Microanalysis 2016, Columbus OH, USA  **Joubert, L-M.**, Wolfaardt, G.M.. and Botha, A.2004. Yeast-ciliate interactions in biofilms. SAMS  Conference, Stellenbosch, South Africa.  **Joubert, L-M.** 2004. Seeing is believing : Yeast interactions in complex biofilms : a visual  approach. WineBiotech Seminar Series, University of Stellenbosch, South Africa. |
| COVER ILLUSTRATION | **Cover illustration for E.Cell Nov 2015,** seeReichhardt, C., Ferreira, JAG, **Joubert, L-M**, Clemons, KV, Stevens, DA, Cegelski, L. 2015. Analysis of the *Aspergillus fumigatus* biofim extracellular matrix by solid-state nuclear magnetic resonance. Eukaryot. Cell. 2015 Jul 10. Pii: EC.00050-15. [Epub.ahead of print].  **Cover illustration for AEM Jan10, 2010,** see Margolis, Jeffry, Sahar El-Etr, **Lydia-Marie Joubert,** Emily Moore, Richard Robison, Amy raley, Alfed Spormann and Denise Monack. 2009. *Francisella tularensis subspecies* novicida chitinases and sec secretion system contribute contribute to bofilm formation on chitin. AEM 76(2): 596-608  **Winning entry for Cover illustration of Book**: *Biofilm Communities: Order from Chaos?* McBain AJ, Allison DG, Brading MG, Rickard AH, Verran J, Walker JT (eds). Cardiff: BioLine,  **Winning illustration for Angewandte Chemie Inside Cover**:, see Bin Shen, et al. Positron Emission Tomography Imaging of Drug-induced Tumor Apoptosis with a Caspase-triggered nanoaggregattion probe. Angew. Chem. Int. Ed.. doi: 10.1002/anie.201303422 |
| IMAGING COMPETITION | **SciVis Challenge 2013:** Winner Illustration Category, NIH International Science and Engineering Visualization Challenge, See Science 343:599-610(2014).  **Olympus Bioscapes**: Awarded honorable recognition for entry in 2005 Olympus BioScapes international scientific digital imaging competition, San Francisco, Dec 2005 |
| PUBLICATIONS from MSc, PhD and first postdoctoral position (-1990) | **Oosthuizen, L.** 1983. The taxonomic value of trichomes in *Pelargonium L’Herit.* (Geraniaceae). *Jl.S.Afr.Bot.* 49 : 221-242.  **Oosthuizen, L.** & Coetzee, J. 1983. Morphogenesis of trichomes of *Pelargonium scabrum. S.Afr. J. Bot.* 2: 305-310  **Oosthuizen, L**. & Coetzee, J. 1984. Trichome initiation during leaf growth in *Pelargonium scabrum. S. Afr. J. Bot.* 3: 50-54.  **Joubert, L**. & Coetzee, J. 1986. Essential oil secretion in *Pelargonium radens. Proc. Electron Microsc. Soc. South Afr.* 16: 109-110.  **Joubert, L.** & Coetzee, J. 1987. Ultrastructure of the glandular hairs of *Pelargonium radens. Proc. Electron Microsc. Soc. South Afr.* 17: 117-118.  **Joubert, L.,** Grobbelaar, N. & Coetzee, J. 1989. *In situ* studies of the ultrastructure of the Cyanobacteria in the coralloid roots of *Encephalartos arenius, E. transvenosus*, and *E.woodii*. *Phycologia* 28 (2) : 197-205. |
| SEMINARS AND CONFERENCES  From MSc, PhD and first postdoctoral position (-1990) | SAAB conference (1982): Trichomes in *Pelargonium.*  SAAB conference (1983): Cell wall composition of trichomes in *Pelargonium scabrum.*  SAAB conference (1984): Ultrastructure of glandular hairs in *Pelargonium scabrum.*  EMSSA conference (1986): Essential oil secretion in *Pelargonium radens.*  EMSSA conference (1987): Ultrastructure of the glandular hairs of *Pelargonium radens*  Departmental Colloquium (1980): Taxonomic value of trichomes in *Pelargonium.*  Departmental Colloquium (1981): My summer internship at Weizmann Institute, Israel (as graduate student in lab of Prof. Dan Atsmon, Plant Genetics)  Departmental Colloquium (1981): Initiation factors of trichomes in *Pelargonium scabrum*.  Departmental Colloquium (1982): Morphogenesis of glandular hairs of *Pelargonium scabrum:* an EM study  Departmental Colloquium (1984): Presentation on research period at Indiana University, USA, studying towards a PhD in the lab of Prof. Paul Mahlberg, Plant Sciences. |
| TEACHING | Teach section of ChemE 183 for Stanford Engineering students, with profs Alex Dunn and Beth Sattely. focusing on Scanning EM techniques. Practical session included. (2010-present)  Teach ‘Advanced Imaging’ Graduate course (2007-09) (with prof Stephen Smith, Stanford University), lecturing on Principles and Applications of Scanning Electron Microscopy.  Trained and advised more than 300 graduate students and private users in Electron Microscopy at Stanford University Medical School, (2006 to current), using Hitachi and Zeiss VP-SEM and FESEM Electron Microscopes.  Supervised MSc students, and co-supervised PhD students in Microbial Ecology, U.Stellenbosch, SA (2002-2005).  Teach Advanced Micro-techniques and Microscopy for Graduate Botany and Microbiology classes at University Stellenbosch, SA, as well as general undergraduate Biology to Freshman to Senior students (1983 – 2004) |
| ASSOCIATIONS | Microscopy Society of America (MSA)  American Society for Microbiology (ASM)  American Geophysical Union (AGU)  Stanford Medicine Music Network (SMMN)  SABLE (South African Business Link to Experts): profiled: http://www.sablenetwork.com/inspirations/advancements-achievements/from-a-namaqualand-village-to-the-new-frontier-of-medical-research-at-stanford |
| PERSONAL | Married to Pierre Joubert (MEng, MBA), Managing Director SambaTV, San Francisco.  Three sons: Niels (30) PhD Stanford (2016); EECS, UC Berkeley(2009); Dieter (26) BS Math/Econ (2016), UC San Diego; Pierre-Henri (23) San Francisco Art Academy University.  Hobbies: Photography, hiking, running, cycling, skiing, Shaolin KungFu.  Music: closely involved in activities of El Camino and (previously) Stellenbosch Youth Orchestras.  Pianist and choral singing in leisure time. |
| REFERENCES | **Prof. Manuel Amieva**  Dept Microbiology and Immunology  Stanford University Medical School  STANFORD CA 94305, USA  [amieva@stanford.edu](mailto:amieva@stanford.edu) |
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|  | **Prof. Stephen Smith**  Paul Allen Brain Institute  SEATTLE WA, USA  [stephens@alleninstitute.org](mailto:stephens@alleninstitute.org)  **Dr. Kent Mc Donald**  Director, Electron Microscope Lab  26 Giannini Hall MC3330  University of California  Berkeley  CA 94720-3330  klm@berkeley.edu |
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