

Jacques Izard, Ph.D.

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My laboratory mission is to understand the role of oral pathogens in oral disease severity and their influence in systemic disease progression. The focus is on bacterial cell biology and the host response.

Permanent-resident status in the U.S.A (Green card) - French citizen

PROFESSIONAL EMPLOYMENT

2008-present: **Board member** of the International Association for the Biological and Medical Research (**IABMR**); Co-chair of the Fund-Raising Committee.

2008-present: Elected Member of the **Forsyth's Research Oversight Committee**.

2008-present: Member of the Harvard Clinical and Translational Science Center.

2007-present: **Assistant Member of the Staff**, The Forsyth Institute, Boston, MA.

2007-present: **Harvard Instructor** in Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine, Boston, MA.

2007- present: Elected Member of the **Forsyth's Partnership and Transition Working Group**.

2004-present: **Editorial Board member** of BMC Biochemistry.

2002-2009: **Adjunct Assistant Professor**, School of Public Health, Biomedical Sciences Graduate Program, Immunology and Infectious Disease, SUNY Albany, Albany, NY.

2005-2007: **Harvard Instructor** in Oral and Developmental Biology, Harvard School of Dental Medicine, Boston, MA.

2005-2007: **Staff Associate**, The Forsyth Institute, Boston, MA.

2004-2007: **Visiting scientist**, Wadsworth Center, Albany, NY.

June 04-Feb 05: **John W. Hein Research Fellow**, The Forsyth Institute, Boston, MA.

Project: Cell biology of *Treponema* and its relation to pathogenicity.

Dec. 98-May 04: **Research Scientist I** (Dec. 98-Apr. 00), **Research Scientist II** (Apr. 00-May 04) in the laboratory directed by Dr. Ronald Limberger. Wadsworth Center, New York State Dept. of Health, Albany, NY. Project: Structure and function of cytoplasmic filaments in spirochetes.

Apr. 96-Dec. 98: **Research Affiliate** in the laboratory directed by Dr. Ronald Limberger.

Wadsworth Center, New York State Department of Health, Albany, NY.

Project: Function of cytoplasmic filaments in spirochetes.

Oct. 95-March 96: **Post-doctoral** position at the Macromolecular-System Engineering.

Laboratory directed by Dr. Claude Lazdunski, Marseille, France.

Short term fellowship from "Fondation pour la Recherche Médicale".

Project: Modification of the specificity of the colicin A channel.

EDUCATION

1996 **Ph.D.**, Cellular Biology and Microbiology, University of Aix-Marseille II, France.

Advisor: Dr. Daniel Baty. Laboratory: Dr. Claude Lazdunski (CNRS).

Competitive doctoral fellowship from the French government.

Project: Understanding the insertion mechanism of a soluble protein in the inner membrane of Gram-negative bacteria: the toxic effect of colicin A.

- 1992 Master of Science, Major in Cellular Biology and Microbiology, University of Provence, Marseille, France. Fellowship from Conseil Général des Bouches du Rhône. Project: Tryptophan mutagenesis of the C-terminal fragment of colicin A for fluorescence studies.
- 1990 Bachelor of Science, Major in Biochemistry, University of Sciences & Techniques of Languedoc, Montpellier, France.

PUBLICATIONS (PEER-REVIEWED) (* corresponding author)

- 13.** Julia Downes, Sonia Vartoukian, Floyd E. Dewhirst, **Jacques Izard**, Tsute Chen, Wenhan Yu, Iain C. Sutcliffe & William G. Wade. *Pyramidobacter pisciolens* gen. nov., sp. nov., a member of the phylum 'Synergistetes' isolated from the human oral cavity. *International Journal of Systematic and Evolutionary Microbiology* (2009) vol. 59 pp. 972-980. DOI 10.1099/ij.s.0.000364-0 NIHMSID#114556. [Journal impact factor (2009): pending]
- 12.** **Jacques Izard***, Chyong-Ere Hsieh, Ronald J. Limberger, Carmen A. Mannella and Mike Marko. Native cellular architecture of *Treponema denticola* revealed by cryo-electron tomography. *Journal of Structural Biology* (2008). Vol.163 (1) pp. 10-17. PMID: 18468917. PMC2519799 [Journal impact factor (2008): pending].
- 11.** Federico Foschi, **Jacques Izard**, Hajime Sasaki, Victorio Sambri, Carlo Prati, Ralph Müller, and Philip Stashenko. *Treponema denticola* in disseminating endodontic infections. (Cover) *Journal of Dental Research* (2006). vol. 85 (8) pp.761-765. [Journal impact factor (2006): 3.475].
- 10.** **Jacques Izard***, Chyongere-E. Hsieh, Carmen A. Mannella, Ronald J. Limberger, and Mike Marko. Periplasm organization in *Treponema denticola* as studied by cryo-electron tomography. *Microscopy and Microanalysis* (2005) vol. 11 (Suppl 2) pp. 340-341. [Journal impact factor (2005): 1.878].
- 9.** **Jacques Izard***, Bruce F. McEwen, Rita M. Barnard, Thomas Portuese, and Ronald J. Limberger. Tomographic reconstruction of treponemal cytoplasmic filaments reveals novel bridging and anchoring components. *Molecular Microbiology* (2004) vol. 51 n. 3 pp. 609-618. [Journal impact factor (2004): 5.959].
- 8.** Linda L. Slivienski-Gebhardt, **Jacques Izard**, William A. Samsonoff and Ronald J. Limberger. Development of a novel chloramphenicol Resistance Expression Plasmid Used for Genetic complementation of a *fliG* Deletion Mutant of *Treponema denticola*. *Infection Immunity* (2004) vol. 72 n. 9 pp. 5493-5497. [Journal impact factor (2004): 4.033].
- 7.** **Jacques Izard***, and Ronald J. Limberger. Rapid Screening Method for Quantitation of Bacterial Lipids from Whole Cells. *Journal of Microbiological Methods* (2003) vol. 55 pp. 411-418. [Journal impact factor: 2.015].
- 6.** **Jacques Izard***, William A. Samsonoff and Ronald J. Limberger. Cytoplasmic filament-deficient mutant of *Treponema denticola* has pleiotropic defects. *Journal of Bacteriology* (2001) vol. 183 n. 3, pp. 1078-1084. [Journal impact factor (01): 3.984].
- 5.** **Jacques Izard***, William. A. Samsonoff, Mary-Beth Coy and Ronald J. Limberger. Genetic and Structural Analyses of the Cytoplasmic Filaments of Wild-type *Treponema phagedenis* and a Flagellar Filament-Deficient Mutant. *Journal of Bacteriology* (1999) vol. 181 n. 21, pp. 6739-6746. [Journal impact factor (99): 3.712].
- 4.** Ronald J. Limberger, Linda L. Slivienski, **Jacques Izard** and William A. Samsonoff. Insertional Inactivation of *Treponema denticola tap1* Results in a Non-Motile Mutant with Elongated Flagellar Hooks. *Journal of Bacteriology* (1999) vol. 181 n. 12, pp. 3743-3750. [Journal impact factor (99): 3.712].

3. Denis Duché, **Jacques Izard**, Juan M. Gonzalez-Mañas, Michael W. Parker, Martine Chartier and Daniel Baty. Two Disulfide Bonds Introduced in the Colicin A Pore-forming Domain Block the *in vivo* but not the *in vitro* Toxin Activity.
Journal of Biological Chemistry (1996) vol. 271 n. 26, pp. 15401-15406.
[Journal impact factor (1996): 7.452].
2. Rita Vos and Yves Engelborghs; **Jacques Izard** and Daniel Baty.
Fluorescence Study of the Three Tryptophan Residues of the Pore-forming Domain of Colicin A Using Multifrequency Phase Fluorometry.
Biochemistry (1995) vol. 34, pp. 1734-1743. [Journal impact factor (1995): 5.144].
1. **Jacques Izard**, Michael W. Parker, Martine Chartier, Denis Duché and Daniel Baty.
A Single Amino Acid Substitution Can Restore the Solubility of Aggregated Colicin A Mutants in *Escherichia coli*.
Protein Engineering (1994) vol. 7 n.12, pp. 1495-1500. [Journal impact factor (1994): 4.062].

BOOK, BOOK CHAPTER, INVITED REVIEWS AND ARTICLES

7. **Jacques Izard***. Cytoskeletal cytoplasmic filament ribbon of *Treponema*: a member of an intermediate-like filament protein family.
Journal of Molecular Microbiology and Biotechnology (2006). vol. 11 pp. 159-166.
[Journal impact factor (2006): 2.058].
6. **Jacques Izard**, and Ronald J. Limberger. Structural and genomic features of treponemal architecture. Book Chapter in: *Treponema* molecular and cellular biology. J. Radolf and S.A. Lukehart (ed.) Horizon Bioscience (2006). ISBN 1-904455-10-7.
5. Anne C. R. Tanner and **Jacques Izard**. *Tannerella forsythia*, a periodontal pathogen entering the genomic era.
Periodontology 2000 (2006). vol. 42 pp. 88-113. [Journal impact factor (2006): 2.800].
4. Anne C. R. Tanner and **Jacques Izard**. Etiology of oral disease in view of microbial complexity.
Oral Biosciences & Medicine (2005) vol. 2 n. 2/3 pp. 209-213.
3. **Jacques Izard***. *Treponema denticola*. Synopsis. MicrobeLibrary.org (2002).
2. **Jacques Izard***. Colicin A, a Pore-forming Bacteriotoxin. Article. Newsletter of the Eastern New York Branch of the American Society for Microbiology (Spring 1997), pp. 2-3.
1. **Jacques Izard***. Mécanisme d'Insertion d'une Bactériotoxine, la Colicine A, dans la Membrane Interne d'*Escherichia coli*. Book. Doctorate thesis, specialty in Cellular Biology and Microbiology. University of Aix-Marseille II, France (1996). Editor ANRT, ref. 96/AIX2/2010.

FUNDINGS

2008-2009, Collaborative Pilot Grant Program of the Forsyth Institute, Boston, MA.

Title: Pilot study on the detection of treponemal bacteria in the brain tissues of Alzheimer's disease subjects.

Effort: 5%. Amount: \$5,000 (total cost).

Role: **Principal Investigator – Active funding**

2008-2009, Imperial College London, Faculty of Medicine, London, UK.

Title: Start-up funds – Serological markers of periodontal disease and pancreatic cancer risk.

Effort: 5%. Amount: \$20,000 (total cost).

Role: **Principal Investigator – Active funding**

2007-2010, Developmental grant of the National Institute of Dental and Craniofacial Research (R21 DE017106).

Title: *Treponema denticola* cytoskeletal filaments and oral infection.

Effort: 35%. Amount: \$275,000 (direct cost); \$441,925 (total cost).

Role: **Principal Investigator – Active funding**

2006-2011, Cooperative agreement of the National Institute of Dental and Craniofacial Research (U01-DE-016937) – Floyd E. Dewhirst (Principal investigator)

Title: A foundation for the oral microbiome and metagenome

Effort: 40%. Amount: \$2,256,783 (direct cost); \$3,844,503 (total cost).

Role: **Investigator – Active funding**

2006-2009, Visualization of biological complexity resource (P41 RR001219).

Title: Structural analysis of periplasmic flagellar filament dynamics of *Treponema*.

Effort: 5%. Amount: Facility use at no cost to investigator.

Role: **Principal Investigator – Active**

2004-2006, John W. Hein Fellowship, funded by The Forsyth Institute.

Project: Cell biology and pathogenicity of *Treponema denticola*.

Effort: 100%. Amount: \$165,000 (total cost).

Role: **Fellow**

1998-2004, Research project grant of the National Institute of allergy and Infectious Diseases (R01AI034354) – Ronald J. Limberger (Principal investigator)

Title: A molecular analysis of treponemal motility genes.

Effort: 100%. Amount: \$1,841,673 (direct cost)

Role: **Investigator**

1995, Short-term competitive fellowship funded by the “Fondation pour la Recherche Médicale”.

Project: Modification of the specificity of the colicin A channel.

Effort: 100%. Duration: 6 months. Amount: about \$12,000 (Salary, total cost).

Role: **Fellow**

1992-1995, Long-term competitive fellowship funded by the French government.

Project: Understanding the insertion mechanism of a soluble protein in the inner membrane of Gram-negative bacteria: the toxic effect of colicin A.

Effort: 100%. Amount: about \$60,000 (Salary, total cost).

Role: **Fellow**

TEACHING EXPERIENCE

- Lecture at Harvard Dental School of Medicine (university years 2005-2009), Oral Microbiology Course OB601.CBS, “Bacterial motility and chemotaxis” (2h).

- Lecture with CME credits. The Forsyth Institute October 9, 2008 (see talks for details).

- Online Mentor of the American Society for Microbiology Minority Mentoring Program (2007-present); Certificate of Outstanding Service awarded in 2007 and 2008.

- Mentor to postdoctoral fellow Dr. Gyanesh Singh (2007-2008).

- Lecture at the State University of New York at Albany (2007), School of Public Health, Graduate Studies, course BMS 610, “Oral health and systemic diseases”, March 6, 2007.

- Lecture at the Master degree in Odontology, University of Bologna, Alma Mater Studiorum, Italy, “Oral bacteria cell-motility, a component of infection” (2h), May 2nd, 2006.

- Forsyth’s After School Workshop, directed to Boston’s High School students. March 29, 2006.

- Mentor for Amanda Gulston (2005). Minority student enrolled in the “Educational Outreach Program” (EOP) sponsored by The Forsyth Institute.

- Lecture at the State University of New York at Albany (2002 and 2004), Department of Biomedical Sciences, Graduate Studies, course BMS 632, Albany Medical College, course AMC 603, Module (4h) on “Bacterial cell division and replication”.

- Continuing education lectures in Molecular Biology at Krackeler Scientific, Inc., Albany, NY, November 2003, 3 hours.

➤ Mentor for Andrea Beyer (2002), Wanda Almodovar Feliciano (2001). Students enrolled in “The Research Experiences for Undergraduates” (REU) program provided by The National Science Foundation (NSF).

➤ Technical training, scientific advice and discussions were provided to the students involved in NSF REU program [Ethan Abel (2003), Alexander Tornow (1999), Nick Spittal (1998), Phillips Calvin (1997)], the New York State REU program [Nick Spittal (1999), Tanya, Ulitsky (1998), Jessica Svatek (1996)], or in SUNY at Albany School of Public Health graduate degree program [Frank Abbruscato (1998), Phil Kurpiel (1997)].

➤ Continuing education lectures on spirochete biology for the Clinical Bacteriology Laboratory at the Wadsworth Center, Albany, NY. Yearly, 1996-2002.

➤ Lecture at the State University of New York at Albany, Department of Biomedical Sciences, Graduate Studies, course BMS 575 Structure of Microbial Pathogens. Title: "Protein Complexes Involved in the Pathogenicity of Spirochetes". February 20, 1997.

➤ Teaching in an experimental program of complementary courses to undergraduate students. 100 hours during the university year 1993-94. University of Aix-Marseille II, France.

➤ Continuing education lectures in biochemistry at Biotransfert, Montreuil-sous-Bois, France, April 29, 1994 (5h).

PROFESSIONAL AFFILIATIONS

International Association for the Biological and Medical Research (Life-time member)

American Dental Education Association (2007-present)

American Association for Dental Research, Boston Branch (2005-present)

International Association for Dental Research (2005-2007) (2009-present)

Sigma Xi (2004-2007; Albany, NY chapter) (2009-present; Harvard University chapter, MA)

American Society for Microbiology (1996-present)

American Association for Dental Research, National Branch (2005-2007)

Association of Public Health Laboratories (2003-2006)

International Society for Infectious Diseases (2002-2005)

American Association for the Advancement of Science (1999-2006)

Eastern New York Branch of the American Society for Microbiology (1997-2007)

Société Française de Biochimie et Biologie Moléculaire (Member of FEBS) (1993-2006)

AD HOC REVIEWER FOR GRANT APPLICATIONS

Nova Scotia Health Research Foundation (2009)

Forsyth Collaborative Pilot Grant Program (2009)

National Science Foundation (2008)

Binational Science Foundation (BSF), grants in section Health Sciences (2000)

AD HOC REVIEWER FOR ARTICLES

Medical Science Monitor (2001-present)

BMC Biochemistry, BioMedCentral Ltd. (2000-present)

Analytical Biochemistry (2004, 2007-2009)

Journal of Periodontal Research (2009)

Molecular Microbiology (2004, 2008)

Journal of Medical Microbiology (2005)

HONORS AND AWARDS

2001, **Wadsworth Center Employee Recognition Award**, as a member of the Bioterrorism Response Team.

1992, **Excellence Award**, Conseil Général des Bouches du Rhône

OTHER CONTRIBUTIONS

Human Oral Microbiome Database (www.homd.org), web content co-designer and data contributor (2006-present). The 2008 press releases were in NIH News, AAAS EurekAlert, The Press Association, Medical News Today, GenomeWeb Daily News (partial list).

Contribution to international culture collection (26 strains): *Actinomyces gerencseriae* F0344, *Actinomyces israelii* F0345, *Actinomyces odontolyticus* F0309, *Actinomyces* sp. Oral Taxon 848 F0332, *Actinomyces* sp. Oral Taxon 180 F0310, *Bacteroidetes bacterium* sp. Oral Taxon 272 F0290 and oral taxon 274 F0058, *Capnocytophaga ochracea* F0287, *Jonquetella anthropi* E3-33 E1, *Lachnospiraceae* sp. oral taxon 107 F0167, *Leptotrichia hofstadii* F0254, *Leptotrichia* sp. oral taxon 847 F0260A, *Leptotrichia goodfellowii* F0264, *Leptotrichia wadei* F0279, *Neisseria* sp. Oral Taxon 014 F0314, *Oribacterium* sp. oral taxon 078 F0262, *Oribacterium sinus* F0268, *Parascardovia inopinata* F0304, *Peptoniphilus* sp. oral taxon 386 F0131, *Prevotella veroralis* F0319, *Prevotella oris* F0302, *Prevotella* sp. oral taxon 299 F0039, *Prevotella* sp. Oral taxon 472 F0295, *Prevotella* sp. oral taxon 317 F0108, *Propionibacterium* sp. oral taxon 191 F0233, *Scardovia inopinata* F0304 (BEI Resources entries HM3-17; HM52-53 and HM91-98) (2009).

Contribution to international resources for molecular biology (52 entries):

Genome surveys totaling over 6 Mb was obtained from *Pyramidobacter pisciolens* W5455 (Genbank ref. DU723013-DU723395 and ET628498-ET629016) (2005 and 2008), *Prevotella* sp. oral taxon 302 strain F0020 (Genbank ref. FI090687-FI091098), *Treponema lecithinolyticum* OMZ 684 (Genbank ref. ET632570-ET633946), *Bulleidia extracta* W1219 (Genbank ref. ET629122-ET629476), *Campylobacter gracilis* ATCC 33236 (Genbank ref. ET629477-ET629866), *Campylobacter rectus* ATCC 33238 (Genbank ref. ET629867-ET630228), *Campylobacter showae* ATCC 51146 (Genbank ref. ET630229-ET630586), *Eubacterium infirmum* ATCC 700433 (Genbank ref. ET630587- ET631005), *Jonquetella anthropi* E3_33 E1 (Genbank ref. ET631006-ET631525), *Leptotrichia buccalis* ATCC 14201 (Genbank ref. ET631526-ET631873), *Solobacterium moorei* W5408 (Genbank ref. ET631874-ET632213), and *Veillonella parvula* ATCC 17745 (Genbank ref. ET632214-ET632569) (2008);

23S rRNA gene sequence from *Jonquetella anthropi* E3_33 (EU840722) and *Synergistes jonesii* ATCC 49833 (EU840723) (2008).

16S rRNA gene sequence from *Tannerella forsythia* oral isolates from monkey (GenBank ref. DQ341410, DQ344917, and DQ344918), and human isolates from dog and cat bites (GenBank ref. DQ344914-DQ344916) (2006); *Bacteroidetes* sp. oral taxon 274 F0058, *Capnocytophaga ochracea* F0287, *Jonquetella anthropi* E3-33 E1, *Lachnospiraceae* sp. oral taxon 107 F0167, *Leptotrichia* sp. oral taxon 847 F0260A, *Leptotrichia goodfellowii* F0264, *Leptotrichia hofstadii* F0254, *Oribacterium* sp. oral taxon 078 F0262, *Oribacterium sinus* F0268, *Peptoniphilus* sp. oral taxon 386 F0131, *Prevotella* sp. oral taxon 299 F0039, *Prevotella* sp. oral taxon 317 F0108, *Propionibacterium* sp. oral taxon 191 F0233 (Genbank ref. FJ577249-FJ577261) (2008); *Actinomyces odontolyticus* F0309, *Actinomyces* sp. Oral Taxon 180 F0310, *Actinomyces* sp. Oral Taxon 848 F0332, *Bacteroidetes bacterium* sp. Oral Taxon 272 F0290, *Leptotrichia wadei* F0279, *Neisseria* sp. Oral Taxon 014 F0314, *Parascardovia denticolens* F0305, *Prevotella oris* F0302, *Prevotella veroralis* F0319, *Prevotella* sp. oral taxon 472 F0295, *Scardovia inopinata* F0304 (FJ717336, FJ7173350, and GQ131410-GQ131418) (2009).

Genes and operon: treponemal motility operons (GenBank ref. AF049342, AF343975) (1998-2001); Cytoplasmic filament gene sequences in *Treponema* spp. (GenBank ref. AF037069, AF062736, AF062737, and AF080570) (1997-2000); Bacteriotoxin colicin K operon (GenBank ref. U27452) (1995).

Model of the cell end of *Treponema denticola* using electron cryo-tomography. Microbiology, 8th ed. Willey et al., McGraw-Hill.

Photography of *Treponema denticola*. The World of Microbes, 2nd ed. Dr. Howard Gest, ASM Press.

Photography of *Treponema denticola* colonies. Bug of the Month at Basilea Pharmaceutica.

ABSTRACTS

27. **Gordon Research Conference “Periodontal Diseases”**, New London, NH, August 2-7, 2009.
O.V. Baranova, F.E. Dewhirst, T. Chen, and Jacques Izard. The Human Oral Microbiome Isolates and Genomic Sequences.
26. **5th Annual Meeting of the International Association for Biological and Medical Research**, Boston, MA, November 20, 2008. O.V. Baranova, D.R. Spencer, F.E. Dewhirst, T. Chen, W. Yu, W.G. Wade, and Jacques Izard. Genetic potential of two members of the Phylum 'Synergistetes' isolated from the human oral microbiome.
25. **108th General Meeting of the American Society for Microbiology**, Boston, MA, June 1-5, 2008. Jacques Izard, C.E. Hsieh, R.J. Limberger, C.A. Mannella, and M. Marko. Cryo-electron tomography revealed *Treponema denticola*'s native cellular architecture and outer-membrane cell constriction structures.
24. **108th General Meeting of the American Society for Microbiology**, Boston, MA, June 1-5, 2008. O.V. Baranova, D.R. Spencer, F.E. Dewhirst, T. Chen, W. Yu, W.G. Wade, Jacques Izard. Genome surveys of two members of the Phylum 'Synergistetes' isolated from the human oral microbiome.
23. **108th General Meeting of the American Society for Microbiology**, Boston, MA, June 1-5, 2008. W. Yu, Jacques Izard, F. E. Dewhirst, and T. Chen.
Dynamic clustering of microbial proteins by fuzzy k-means analysis.
22. **108th General Meeting of the American Society for Microbiology**, Boston, MA, June 1-5, 2008. F.E. Dewhirst, T. Chen, J. Izard, B.J. Paster, A.R.C. Tanner, O.V. Baranova, J.M. Blanton, E.A. Klein, D.R. Spencer, W-H. Yu, E.F. Mongodin, and W.G. Wade.
The Human Oral Microbiome Database.
21. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 20-25, 2008. A. Marango, Jacques Izard and V. Sambri.
In vitro uptake and killing of *Treponema denticola* by isolated mouse peritoneal macrophages.
20. **Modification and Control of Oral Biofilms**, Brewster, MA, October 10-11, 2007. Jacques Izard, C.E. Hsieh, M. Marko, C.A. Mannella, R.J. Limberger.
A cryoelectron tomography approach to investigate the native cellular architecture of *Treponema denticola*.
19. **Forsyth Colgate Center for the Advancement of Global Oral Health Alliance Day**, Boston, MA, June 26, 2006. Jacques Izard, C.E. Hsieh, M. Marko, C.A. Mannella, R.J. Limberger.
Treponema denticola native cellular architecture as revealed by cryoelectron tomography.
18. **Gordon Research Conference “Biology of Spirochetes”**, Il Ciocco, Italy, April 23-28, 2006. Jacques Izard, C.E. Hsieh, M. Marko, C.A. Mannella, R.J. Limberger
Treponema denticola as revealed by cryoelectron tomography.
17. **35th Annual Meeting and Exhibition of the AADR**, Orlando, FL, March 8-11, 2006. S.M. Barbuto, Jacques Izard, T. Chen, W.G. Wade, and F.E. Dewhirst. Partial genome sequencing of *Synergistes* phylum oral strain W5455. J. Dent. Res. 85(Spec. Iss. A):Abstr. #2123, 2006.
16. **Dentin / Pulp Complex Meeting, IADR Pulp Biology Group**, Dusseldorf, Germany, September 18-20, 2005. F. Foschi, Jacques Izard, C. Prati, V. Sambri, and P. Stashenko.
Treponema denticola endodontic infection in wild type and SCID mice.
15. **The Forsyth Institute Educational Outreach Program 2005**, Boston, MA, Sept. 14, 2005. A. Gulston and Jacques Izard. Investigating a DNA quantitation method for mixed samples.
14. **Microscopy and Microanalysis 2005**, Honolulu, Hawaii, July 31-August 4, 2005. Jacques Izard, C.-E. Hsieh, C.A. Mannella, R.J. Limberger, M. Marko
Periplasm Organization in *Treponema denticola* as Studied by Cryo-electron Tomography

13. **83rd General Session and Exhibition of the IADR**, Baltimore, MD, March 9-12, 2005.
F. Foschi, Jacques Izard, H. Sasaki, C. Prati, V. Sambri, and P. Stashenko.
Treponema denticola and red-complex endodontic infection in RAG-1 and wild-type mice.
12. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 25-30, 2004.
Jacques Izard, B.F. McEwen, C.R. Hauer and R.J. Limberger.
Cytoplasmic Filament Protein Complex of *Treponema phagedenis*.
11. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 25-30, 2004.
L.L. Slivinski-Gebhardt, W.A. Samsonoff, Jacques Izard, and R.J. Limberger. New vector for genetic complementation in *Treponema denticola*.
10. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 27-February 1, 2002. Jacques Izard and R.J. Limberger. Lipid quantitation of bacterial cells.
9. **Keystone Symposium “Bacterial Chromosomes”**, Santa Fe, NM, February 7-13, 2001.
Jacques Izard and R.J. Limberger. Insertional Inactivation of *Treponema denticola cfpA* Results In Altered Cell Division Processes.
8. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 16-21, 2000.
Jacques Izard and R.J. Limberger. Insertional Inactivation of the *Treponema denticola* Cytoplasmic Filament Gene Results in Altered Chromosome Segregation.
7. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 16-21, 2000.
L.L. Slivinski, Jacques Izard and R.J. Limberger.
Treponema denticola *FliG* Mutants are Defective in Flagellar Structure and Function.
6. **FEBS’99**, 26th Meeting of the Federation of European Biochemical Societies, Nice, France, June 19-24, 1999. Jacques Izard and R.J. Limberger. Insertional Inactivation of the *Treponema denticola* Cytoplasmic Filament Gene Results in Altered Cell Growth and Division.
5. **BLAST V: Bacterial Locomotion and Signal Transduction**, Cuernavaca, Mexico, January 16-21, 1999. R.J. Limberger, L.L. Slivinski and Jacques Izard.
Insertional Inactivation of *Treponema denticola Tap1* Results in a Non-Motile Cell with Elongated Wave-Like Flagellar Hooks.
4. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 18-23, 1998.
Jacques Izard and R. J. Limberger.
Analysis of Genetics, Structure and Function of the Treponemal Cytoplasmic Filament.
3. **97th General Meeting of the American Society for Microbiology**, Miami, FL, May 4-8, 1997.
Jacques Izard, W.A. Samsonoff, M.-B. Coy and R.J. Limberger.
Genetic and Structural Features of the Cytoplasmic Filaments of *Treponema phagedenis*.
2. **Meeting of the Doctoral School for Life and Health Sciences**, Marseille, France, April 7-8, 1994. Jacques Izard, M. Chartier and D. Baty. A single Amino Acid Substitution Can Restore the Solubility of the Colicin A Tryptophan Mutants.
1. **Congress 1993 of French Bioenergetic Group**, Presqu’île de Giens, France, October 11-13 1993. Jacques Izard, M. Chartier and D. Baty.
Stabilization of the Soluble Form of Colicin A is Dependent on Hydrophobic Cavities.

SEMINARS

31. **The Forsyth Institute**, Boston, MA, May 28, 2009. A pilot study on the detection of treponemal bacteria in the brain tissues of Alzheimer’s disease subjects. Invited by Dr. A. Campos-Neto.
30. **Tohoku-Forsyth Symposium**, Boston, MA, March 10-11, 2009. Genetic potential of the oral microbiome. Invited by Drs. Hidetoshi Shimauchi and Margaret Duncan, chairs.
29. **The Forsyth Institute**, Boston, MA, October 9, 2008. From the genetic potential of the oral microbiome to the attachment of oral spiral bacteria.
28. **Gordon Research Conference “Biology of Spirochetes”**, Ventura, CA, January 10-25, 2008.
Cytoskeleton of treponemes. Invited by Dr. Sven A. Bergstrom, chair.

27. **UCLA School of Dentistry, Oral Biology and Medicine**, Los Angeles, CA, December 12, 2006. From infection associated bone loss to *Treponema* cell organization in 3D. Invited by Drs. Renate Lux and Wenyuan Shi.
26. **University of Oslo**, Faculty of Dentistry, Forsyth Day, Oslo, Norway, May 16, 2006. First three-dimensional reconstruction of an oral pathogen: *Treponema denticola* cell organization and its implications for the host. Invited by Dr. Ingar Olsen.
25. **University of Bologna**, Alma Mater Studiorum, Dipartimento di Scienze Odontostomatologiche, Bologna, Italy, May 2nd, 2006. Structural organization of the pathogen *Treponema denticola*. Invited by Prof. Carlo Prati and Dr. Federico Foschi.
24. **The Forsyth Institute**, Boston, MA, April 6, 2006. From microbial cell biology to the host.
23. European Research Group for Oral Biology (**ERGOB**), Facing the future – Challenges in oral biology. Geneva, Switzerland, September 4, 2005. Etiology of oral disease in view of microbial complexity. Anne C. R. Tanner [presenter] and Jacques Izard (see related article).
22. 15th Annual **OIMRG meeting** (NICDR Oral Immunology and Microbiology Research Group), 4th Annual Mark Wilson Conference, San Juan, Puerto Rico, February 5-7, 2005. First three-dimensional reconstruction of an oral pathogen: filaments' organization in *Treponema denticola*.
21. **The Forsyth Institute**, Boston, MA, April 13, 2004. Filaments, bridges and cell division: from syphilis to gingivitis. Invited by Dr. Margaret Duncan.
20. **Rensselaer Polytechnic Institute**, Troy, NY, July 21, 2003. Detection Methods of Microbiological agents: focus on bacteria. Invited by Dr. Yves Bellouard.
19. **Louisiana State University**, Health Sciences Center, New Orleans, LA, April 2, 2003. Filaments, bridges and cell division: from syphilis to gingivitis. Invited by Dr. Richard O'Callaghan.
- 12-18. Young Investigators' Meeting, **Wadsworth Center**, Albany, NY, yearly from December 1996 to 2002. Cytoplasmic filaments, cell division and motility of *Treponema*.
11. **Institut Pasteur**, Paris, France, September 19, 2000. Cytoplasmic Filaments in Spirochetes Associated with Gingivitis and Syphilis. Invited by Dr. Isabelle Saint Girons.
10. Laboratories for Clinical Microbiology Research Meeting, **Wadsworth Center**, Albany, NY, February 10, 2000. Treponemal Cytoplasmic Filaments and Cell Division.
9. **Gordon Research Conference "Biology of Spirochetes"**, Ventura, CA, January 16-21 2000. The Cytoplasmic Filaments of Treponemes are Involved in Chromosome Segregation.
8. **Institute for Transmissible Pathology**, Marseille, France, June 28, 1999. A Cytoplasmic Filamentous Ribbon in Spirochetes Associated with Gingivitis and Syphilis. Invited by Dr. Jean-Marie Pages.
7. Laboratories for Clinical Microbiology Research Meeting, **Wadsworth Center**, Albany, NY, December 19, 1998. Cytoplasmic Filaments of Pathogenic Treponemes.
6. Laboratories for Clinical Microbiology Research Meeting, **Wadsworth Center**, Albany, NY, October 10, 1997. Cytoplasmic Filaments of *Treponema phagedenis*.
5. **Laboratory of Macromolecular-System Engineering**, Institute of Structural Biology and Microbiology, Marseille, France, September 16, 1997. Cytoplasmic Filaments of Pathogenic and Non-pathogenic Treponemes. Invited by Drs. D. Baty and C. Lazdunski.
4. **Albert Einstein College**, New York, NY, November 17, 1995. Topology of the Ionic Channel Forms by Colicin A Using Disulfide Bond Engineering. Invited by Dr. Steffen Slatin.
3. **Wadsworth Center**, Albany, NY, November 15, 1995. Colicin A Toxin: a Soluble Protein which Forms Ionic Channels in the Inner Membrane of *Escherichia coli*. Invited by Dr. R. Limberger.
2. **BIOTransfer**, Montreuil-sous-Bois, France, April 29, 1994. Protein Sequencing in Biotechnology: Applications and Future Prospects. Invited by Serguej Buchet.
1. **Meeting of the Doctoral School for Life and Health Sciences**, Marseille, France, April 8, 1994. The Mutation of One Amino-acid is able to Restore the Solubility of Tryptophan Mutants of Colicin A.

CERTIFIED TRAINING

Training in the protection of human subjects in research (2002-2009).
Harvard ManageMentor Plus, Management training (2006).

WORK-RELATED EXPERIENCE

> **Secures funding** for research programs through grants.

> Skilled for **managing programs** and work groups using **multidisciplinary approaches**.

The interdisciplinary collaborations, as a team leader or team member, involved biophysicists, engineers, bioinformaticians, immunologist and cell biologists to provide resources, expertise and technique access. My natural **leadership abilities** have developed during **collaborations, mentoring** of students and **supervising** of personnel. Specific training in management has also been received.

> **Strong written and verbal skills**. I have written **articles and reviews** for journals with an international readership. The work was also presented during **seminars** or using **posters** at national and international venues. My **teaching** and **mentoring** credentials encompass all professional levels from continuing education to graduate studies. I have been actively involved in the **writing of grant applications, research proposals, reports, and summary of projects**.

> Well versed in **designing, planning, and conducting studies for infectious disease, biochemistry, molecular biology, structural biology, genomics and microbiology oriented programs or projects**. I developed and planned projects with specific goals for myself, and for collaborative projects.

> **Critical evaluation** of the published and produced data are part of my strong work ethic. I have been **reviewing articles and grant applications** for different scientific journals with international readership (Molecular Microbiology, Analytical Biochemistry, etc.), and for american and foreign not-for-profit and governmental institutions.

> **Wide variety of excellent technical skills** that include molecular biology (cloning, mutagenesis, library screening, regulation, blots, real-time PCR), biochemistry, protein engineering, protein expression and purification, protein-protein interaction analysis, molecular modeling, darkfield and fluorescent microscopy, aseptic aerobic and anaerobic techniques, 1D and 2D electrophoresis, immuno-blotting, planar lipid bilayers, bacterial fermentation, etc.

> Proficient in the use of **computers on different platforms** (Macintosh, Windows, and UNIX), with a diversity of programs including word processing, graphic and digital presentation. **Bioinformatics** tools and programs have been used extensively during the different projects.

> **Self-motivated**, I maintain **state-of-the-art knowledge** in appropriate biological scientific discipline through published literature, attendance at training sessions, and scientific meetings.

> Being multicultural and **multilingual** (French and English) indicates that I am experienced looking at problems and opportunities from different perspectives, and also demonstrates that I can adjust my style to different people and situations.