

JEROEN SAEIJ

Curriculum Vitae

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Research Interests

The primary research interest of the Saeij laboratory is to understand how intracellular parasites exploit and manipulate the host cells in which they live, to ensure their survival, replication, and transmission, and hence their success. Our experimental focus is *Toxoplasma gondii*, considered the most successful protozoan parasite of warm-blooded animals. *Toxoplasma* can cause serious disease in immunocompromised patients, such as AIDS patients, and the unborn fetus. It can also cause blindness in healthy adults and children. Our results suggest that analogous to bacterial pathogens and their secretion system, *Toxoplasma* can secrete proteins into host cells to subvert host-cell signaling pathways and block host effector mechanisms. Proteins that it secretes that get inserted into the parasitophorous vacuole membrane (PVM) also play a role in the co-option of host cell processes and the uptake of nutrients. We believe that a detailed understanding of the molecular mechanisms by which *Toxoplasma* secreted proteins aid in its co-option of the host cell will identify new drug targets which are urgently needed as the current drugs are poorly tolerated and do not target all life stages. I have a broad background in immunology and parasitology with specific training in the genetics of host-pathogen interactions. As a PhD student I studied the genetics of resistance of inbred carp to trypanosomes while as a postdoctoral fellow at Stanford, I studied the genetics of *Toxoplasma* strain differences in virulence and modulation of the host cell. A major effort of our lab is to identify *Toxoplasma* genes that mediate the modulation of the host cell, to characterize the proteins encoded by these *Toxoplasma* genes, their host cell interaction partners and their role in virulence and co-option of the host cell. We also study host genetic factors involved in resistance to *Toxoplasma*. Thus, the overarching goal of the lab is to understand susceptibility to infectious disease, which is likely determined by a complex interplay between host and parasite genotypes. To achieve our goals we use a combination of genomics, biochemistry, genetics, microscopy, immunology and computational tools.

Degrees

Ph.D., Immunology, Wageningen University, Wageningen, The Netherlands, 2002

“The immune response of carp to blood flagellates: A model for studies on disease resistance and stress”.

Thesis advisors: Geert Wiegertjes and Willem van Muiswinkel

M.S., Biology, Wageningen University, Wageningen, The Netherlands, 1997

B.S., Biology, Wageningen University, Wageningen, The Netherlands, 1995

Employment

Associate Professor, Department of Biology, MIT, Cambridge, 2012 - current

Assistant Professor, Department of Biology, MIT, Cambridge, October 2007 - 2012

Postdoctoral fellow, Department of Microbiology and Immunology, Stanford University, 2002 - 2007

Supervised by: Prof. John Boothroyd

Graduate Research Associate, Department of Cell Biology and Immunology, Wageningen, The Netherlands, 1998-2002

Honors

Selected American Society for Microbiology division AA (Free-Living, Symbiotic and Parasitic Protists)

Lecturer, annual ASM meeting, Denver, 2013

Swanson Career Development Professorship in the Life Sciences, MIT, 2012-2013

Pew Scholar in the Biomedical Sciences Award, 2010

Massachusetts Life Sciences Center New Investigator Award, 2008

John Reed Fund Award, MIT, 2008

Postdoctoral fellowship, California University-wide AIDS Research Program, 2003-2005
Best publication award, Wageningen Institute of Animal Sciences, 2003
Ph.D. *cum laude* (awarded to top 5%), Wageningen University, 2002
M.S. *cum laude*, Wageningen University, The Netherlands, 1997
ERASMUS fellowship, European Union, Santiago de Compostela, Spain, 1996
B.S. *cum laude*, Wageningen University, The Netherlands, 1995

Students Supervised

Undergraduate students

MIT Summer Research Program (MSRP)

Polite, Markeiya, Summer 2008; Currently medical student at Louisiana State University School of Medicine
Sosa, Oscar, Summer 2009; Currently graduate student at MIT Woods Hole Oceanographic Institution joint program in Oceanography/Applied Ocean Science and Engineering
Castagna, Brittany, Summer 2011; Currently quality assurance at MicroTest Laboratories

Amgen Scholars Research Program

Rodda, Lauren, Summer 2010; Currently graduate student at the University of California, San Francisco
Hu, Kenneth, Summer 2010; Currently graduate student at Stanford University
De la Puente, Carolina, Summer 2011, Currently master's student in health services administration at George Washington University
Mcfetridge, Kiva, Summer 2012, Currently senior Texas State University, San Marcos

Undergraduate Research Opportunity (UROP)

Nguyen, Quynh, Fall 2011, Spring/Fall 2012, Spring/Fall 2013- current
Sugano, Dordaneh, Spring/Fall 2010; Currently technician at MIT
Lin, Stephanie, Spring/Fall 2010; Currently Rhodes scholar at Oxford University
Hu, Kenneth, Summer 2009, Spring 2011; Currently graduate student at Stanford University
Rodda, Lauren, Summer/Fall 2008, Fall 2009, Spring/Fall 2010; Currently graduate student at UCSF

Master's Students

From Wageningen University, The Netherlands, 6-9 months Master's thesis in my lab:

Wang, Yiding, 2008, Currently project supervisor at R&D at Sinovac Biotech Ltd, China
Gaiser, Rogier, 2008-2009, Currently Marie Curie Early Stage Research Fellow at Centro de Investigaciones Biologicas in Madrid, Spain
Cornel, Lara, 2009, Currently Quality Assurance at Sanquin, The Netherlands
Sprokholt, Joris, 2010, Currently graduate student at The Netherlands Cancer Institute
Boedec, Erwan, Ecole supérieure de Biotechnologie de Strasbourg, 2010, 9 month Master's thesis, Currently Engineer in molecular biology, INSERM
Aylan Farid-Arenas, Universidad del Quindío, Quindío, Colombia, 9 month Master's research, Currently researcher in the Group of Molecular Parasitology, Universidad del Quindío, Quindío, Colombia

MIT Graduate Students

Cirelli, Kimberly 2011 – current, supported by an NIH F31 diversity fellowship
Yang, Ninghan, 2010 – current, supported by an A*STAR fellowship (from Singapore)
Niedelman, Wendy, 2009 – 2013, Received Ph.D. in 2013, Currently high school teacher
Samuel, Minot, 2009, Transferred to University of Pennsylvania
Rosowski, Emily, 2008-2013, Received Ph.D. in 2013, Currently postdoctoral fellow in Anna Huttenlocher's lab at the University of Wisconsin, Madison
Lu, Diana, 2008-2013, Received Ph.D. in 2013
McKell, Renee, 2009-2011, Received M.S. in 2011, Currently technician at Columbia University

Postdoctoral Researchers

Camejo, Ana, 2011-current, supported by an American Heart Association Fellowship (2012-current)
Gold, Dan, 2010-current, supported by Knights Templar Eye Foundation Fellowship (2012)
Hassan, Musa, 2010-current, supported by a Wellcome Trust-MIT Postdoctoral Fellowship (2010-2013)
Jensen, Kirk, 2008-current, supported by Irvington Postdoctoral Fellowship (2009-2011) and Charles A. King Trust fellowship (2012-current)
Melo, Mariane, 2010-2013, supported by Knights Templar Eye Foundation Fellowship (2011), Currently research associate, Darrell Irvine lab, MIT
Cynthia Cordeiro, 2009-2010, Currently Assistant Professor, Department of Ophthalmology, Universidade Federal de Minas Gerais, Brazil

Teaching Experience

MIT

7.26/7.66: Molecular Basis of Infectious Disease

(Spring 2010, Spring 2011, Spring 2012, Spring 2013).

Designed for undergraduate and graduate students by J. Saeij and Prof. Dennis Kim, serves as a restricted elective for undergraduate students. This course focuses on the principles of host-pathogen interactions with an emphasis on infectious diseases of humans. Presents key concepts of pathogenesis through the study of various human pathogens. Lectures are accompanied by readings that illustrate modern experimental molecular methodologies.

7.16: Project Lab: Biotechnology II (Undergraduate course)

Co-taught with Prof. Mike Hemann Spring 2009, Spring 2010, Spring 2011, Spring 2012; Teaching alone, Spring and Fall 2013.

Designed new project lab together with Prof. Mike Hemann. Students apply emerging high-throughput genetic approaches to study the response of mammalian cells to cytotoxic or infectious stimuli. RNA interference (RNAi) screening and microarray expression analysis is used to examine the genetics of cellular survival and death pathways. Teams of two students design and carry out experiments to address questions regarding the mechanisms that govern the regulation and execution of cellular responses. Some projects involve the use of DNA damaging agents or other cytotoxic drugs to help understand the pathways that control a cell's response to chemotherapy. Other projects examine the genes that underlie the cellular response to pathogens.

7.492: Methods and Problems in Microbiology: 2011-2013, co-discussion leader once each year.

External

Molecular Pathogenesis Course, Dartmouth Medical School, *toxoplasmosis* (1 day), 2009.
Molecular and Cellular Parasitology Course, Harvard School of Public Health (1 day), 2012
Microbial Pathogenesis Course, Rockefeller University (1 day), 2010, 2012, 2014

Service

Internal

Mentor in the MIT Summer Research Program (MSRP) (see above for list of students supervised)
Mentor in Amgen Scholars Research program (see above for list of students supervised)
Participated in Biology graduate student open houses and interviews, 2008-current
Microbiology graduate program, admissions committee, 2010-2013
Interdepartmental graduate program in microbiology, graduate committee, 2010-current
Biology graduate program, admissions committee, 2010, 2012-2013
Participated in interviewing new faculty candidates, 2008-current
Occasional discussion leader and student mentor (grant proposal writing) in graduate course Method & Logic in Molecular Biology (7.50)

Organizer, Department of Biology IAP seminar series, 2012
Hosted Biology seminar speakers (2011, Vojo Deretic and Ruslan Medzhitov; 2012 Dan Portnoy)
Participated in Microbiology graduate student open houses and interviews, 2011-current
Interviewed BioMicroCenter bioinformatician candidates, 2011
Microbiology graduate student advisor, 2011-present
Faculty search committee, Broad Institute, 2010
Judge for MIT-THINK scholars program competition, 2009
Participated in The Computational and Systems Biology graduate program open houses and interviews, 2008-2011
Participated in discussion group for Vertex Day, 2008
Undergraduate advisor, 2008-present
Interviewed BioMicroCenter director candidates, 2008

Graduate prelim exam committee member for: Mohini Jangi (Sharp), Fanrong Kong (King), Alison Takemura (Polz), Tanya Todorova (Chang), Jennifer Ricks (Hemann), Ana de Regt (Sauer), Charlotte Seid (Grossman), Diana Chien (DeLong), Juan Alvarez (Lodish/van Oudenaarden).

Graduate thesis committee member for: Dan Pagano (Kim), Alejandra Falla Castillo (Niles).

Undergraduate advisor, Biology Department, for: Sarah Alkilany, Anastassia Bobokalonova, Vivek Dasari, Virup Gubba, Molly Schmidt, Matthew Skalak, Raymond Nguyen, Jacob Austin-Breneman, Christine Hazlett, Arun Devabhaktuni, Charles DeRobertis, Megan Roytman, Jenny Zhou, Christina Tallon, Sudha Guttikonda.

Graduate advisor for: Diana Chien, Fahim Farzadfard (microbiology graduate program)

External

External Examiner for Ph.D theses:

C.M. Sampaio Ribeiro (Wiegertjes lab, Wageningen University, The Netherlands), Diana Low Hooi Ping (Ding Jeak Ling Lab, National University of Singapore), Porkodi Panneerselvam (Ding Jeak Ling Lab, National University of Singapore), Nicolas Chevrier (Hacohen Lab, Harvard University), Gary Bushkin (Samuelson Lab, Boston University).

Ad Hoc Reviewer:

PNAS, Cell Host & Microbe, PLoS Pathogens, Journal of Experimental Medicine, Nature Methods, International Journal for Parasitology, Journal of Parasitology, Molecular Microbiology, PLoS One, PLoS Negl. Trop. Diseases, PLoS Genetics, Infection and Immunity, European Journal of Immunology, Acta Tropica, Critical Reviews in Immunology, Annals of Tropical Medicine & Parasitology, Molecular Microbiology, Trends in Parasitology, Experimental Parasitology, BMC genomics, Virulence, Clinical Infectious Diseases, Schizophrenia bulletin, Emerging Infectious Diseases.

Guest Editor:

PLoS Pathogens

Ad Hoc Reviewer for International Funding Agencies:

The Wellcome Trust (UK), Medical Research Council (UK)

Ad Hoc Reviewer for National Funding Agencies:

New England Regional Center of Excellence: Biodefense and Emerging Infectious Diseases (NERCE:BEID)

Conference Meetings:

Session moderator at the 10th, 11th and 12th international congress on toxoplasmosis meeting, 2009, 2011 and 2013

Peer-reviewed Publications

([§]Denotes shared first author. *Denotes graduate students from my lab. #Denotes Co-corresponding authors)
 PDFs available at https://www.researchgate.net/profile/Jeroen_Saeij/

From MIT

1. Cirelli KM^{§*}, Gorfou G, Hassan MA, Printz M, Crown D, Breen L, Leppla SH, Grigg ME[#], **Saeij JP[#]**, Moayeri M[#]. Inflammasome sensor NLRP1 controls rat macrophage susceptibility to *Toxoplasma gondii*. *PLoS Pathogens*. 2013. Accepted.
2. Melo MB, Nguyen QP, Cordeiro C, Hassan MA, Yang N*, McKell R*, Rosowski EE*, Julien L, Butty V, Darde M-L, Ajzenberg D, Fitzgerald K, Young LH, **Saeij JP**. Transcriptional analysis of murine macrophages infected with different *Toxoplasma* strains identifies novel regulation of host signaling pathways. *PLoS Pathogens*. 2013. Accepted.
3. Hassan MA, Butty V, Jensen KD, **Saeij JP**. The genetic basis for individual differences in mRNA splicing and Apobec1 editing activity in murine macrophages. *Genome Research*. 2013. Accepted.
4. Rosowski EE*, Nguyen QP, Camejo A, Spooner E, **Saeij JP**. *Toxoplasma gondii* inhibits IFN- γ - and IFN- β -induced host cell STAT1 transcriptional activity by increasing the association of STAT1 with DNA. *Infection and Immunity*. 2013. Accepted.
5. Lim D, Gold DA, Julien L, Rosowski EE*, Niedelman W*, Yaffe MB[#], **Saeij JP[#]**. Structure of the *Toxoplasma gondii* ROP18 kinase domain reveals a second ligand binding pocket required for acute virulence. *The Journal of Biological Chemistry*. 288(48):34968-80; 2013.
6. Niedelman W*, Sprokholt JK, Clough B, Frickel EM, **Saeij JP**. Cell death of interferon-gamma stimulated human fibroblasts upon *Toxoplasma gondii* infection induces early parasite egress and limits parasite replication. *Infection and Immunity*. 81(12):4341-9; 2013.
7. Camejo A, Gold DA, Lu D*, McFetridge K, Julien L, Yang N*, Jensen KD, **Saeij JP**. Identification of three novel *Toxoplasma gondii* rhoptry proteins. *International Journal for Parasitology*. S0020-7519(13)00222-1; 2013. [Epub ahead of print].
8. Yang N*, Farrell A, Niedelman W*, Melo MB, Lu D*, Julien L, Marth GT, Gubbels MJ, **Saeij JP**. Genetic basis for phenotypic differences between different *Toxoplasma gondii* type I strains. *BMC Genomics*. 14:467; 2013.
9. Jensen KD, Hu K, Whitmarsh RJ, Hassan MA, Julien L, Lu D*, Chen L, Hunter CA, **Saeij JP**. *Toxoplasma gondii* rhoptry 16 kinase promotes host resistance to oral infection and intestinal inflammation only in the context of the dense granule protein GRA15. *Infection and Immunity*. 81(6):2156-67; 2013. 'Article of significant interest' selected by the editors, see *Research Spotlight: Infection and Immunity*, 81(6): 1859; 2013.
10. Rosowski EE*, **Saeij JP**. *Toxoplasma gondii* clonal strains all inhibit STAT1 transcriptional activity but polymorphic effectors differentially modulate IFN γ induced gene expression and STAT1 phosphorylation. *PLoS One*. 7(12):e51448; doi: 10.1371/journal.pone.0051448; 2012.
11. Hassan MA, Melo MB, Haas B, Jensen KD, **Saeij JP**. De novo reconstruction of the *Toxoplasma gondii* transcriptome improves on the current genome annotation and reveals alternatively spliced transcripts and putative long non-coding RNAs. *BMC Genomics*. 13(1):696; 2012.
12. Minot S[§], Melo MB[§], Li F, Lu D*, Niedelman W*, Levine SS, **Saeij JP**. Admixture and recombination among *Toxoplasma gondii* lineages explains global genome diversity. *PNAS*. 14;109(33):13458-63; 2012.
13. Niedelman W*, Gold DA, Rosowski EE*, Sprokholt J, Lim D, Farid A, Melo MB, Spooner E, Yaffe MB, **Saeij JP**. The rhoptry proteins ROP18 and ROP5 mediate *Toxoplasma gondii* evasion of the murine, but not the human, interferon-gamma response. *PLoS Pathogens*. 8(6):e1002784; 2012.
14. Szatanek T, Anderson-White BR, Faugno-Fusci DM, White M, **Saeij JP**, Gubbels MJ. Cactin is essential for G1 progression in *Toxoplasma gondii*. *Molecular Microbiology*. 84(3):566-77; 2012.
15. Lim DC, Cooke BM, Doerig C, **Saeij JP**. *Toxoplasma* and *Plasmodium* protein kinases: roles in invasion and host cell remodelling. *International Journal for Parasitology*. 42(1):21-32; 2012. [Review article]
16. Virreira-Winter S, Niedelman W*, Jensen KD, Rosowski EE*, Julien L, Spooner E, Caradonna K, Burleigh BA, **Saeij JP**, Ploegh HL, Frickel E. Determinants of GBP recruitment to *Toxoplasma gondii* vacuoles and the parasitic factors that control it. *PLoS One*. 6(9):e24434; 2011.

17. Reese ML, Zeiner GM, **Saeij JP**, Boothroyd JC, Boyle JP. Polymorphic family of injected pseudokinases is paramount in *Toxoplasma* virulence. *PNAS* 108(23):9625-30; 2011. *Selected by Faculty of 1000*.
18. Jensen KD, Wang Y, Tait ED, Shastri AJ, Hu K, Cornel L, Boedec E, Ong Y, Chien Y, Hunter CA, Boothroyd JC, **Saeij JP**. *Toxoplasma* polymorphic effectors determine macrophage polarization and intestinal inflammation. *Cell Host & Microbe* 9(6):472-83; 2011. *Highlighted in: Macrophages as a battleground for Toxoplasma pathogenesis. Cell Host & Microbe* 9(6):445-7; 2011.
19. Melo MB[§], Jensen KD[§], **Saeij JP**. *Toxoplasma gondii* effectors are master regulators of the inflammatory response. *Trends in Parasitology*. 27(11):487-95; 2011. [Review article]
20. Rosowski EE^{§*}, Lu D^{§*}, Julien L, Rodda L, Gaiser R, Jensen KD, **Saeij JP**. Strain-specific activation of the NF- κ B pathway by GRA15, a novel *Toxoplasma* dense granule protein. *Journal of Experimental Medicine* 208(1):195-212; 2011. *Selected by Faculty of 1000. Highlighted in: It takes II to induce NF- κ B. Nature Reviews Microbiology* 9, 147, 2011.
21. Blader IJ, **Saeij JPJ**. Communication between *Toxoplasma gondii* and its host: impact on parasite growth, development, immune evasion, and virulence. *APMIS (acta pathologica, microbiologica, et immunologica Scandinavica)*. 117(5-6):458-76; 2009. [Review article]

From Postdoctoral work

22. Boyle JP, **Saeij JP**, Harada SY, Ajioka JW, Boothroyd JC. Expression quantitative trait locus mapping of *Toxoplasma* genes reveals multiple mechanisms for strain-specific differences in gene expression. *Eukaryotic Cell*. 7(8):1403-14; 2008.
23. **Saeij JP**, Arrizabalaga G, Boothroyd JC. A cluster of four surface antigen genes specifically expressed in bradyzoites, SAG2CDXY, plays an important role in *Toxoplasma gondii* persistence. *Infection and Immunity* 76(6): 2402-2410; 2008.
24. Boyle JP, **Saeij JP**, Boothroyd JC. Inconsistent dissemination patterns of *Toxoplasma gondii* following oral infection. *Experimental Parasitology* 116(3):302-305; 2007.
25. **Saeij JP**[§], Coller S[§], Boyle JP, Jerome ME, White MW, Boothroyd JC. *Toxoplasma* co-opts host gene expression by injection of a polymorphic kinase homologue. *Nature* 445(7125): 324-327; 2007. *Selected by Faculty of 1000. Highlighted in: Toxo researchers spot the difference. Nature Reviews Microbiology* 5, 86, 2007.
26. **Saeij JP**[§], Boyle JP[§], Coller SC, Taylor S, Sibley LD, Brooke-Powell ET, Ajioka JW, Boothroyd JC. Polymorphic secreted kinases are key virulence factors in toxoplasmosis. *Science* 314(5806):1780-1783; 2006. *Selected by Faculty of 1000. Highlighted in: Toxo researchers spot the difference. Nature Reviews Microbiology* 5, 86, 2007; *Nature Immunology* 8, 129, 2007.
27. Boyle JP, Rajasekar B, **Saeij JP**, Ajioka JW, Berriman M, Paulsen I, Roos DS, Sibley D, White M, Boothroyd JC. Just one cross appears capable of dramatically altering the population biology of a eukaryotic pathogen like *Toxoplasma gondii*. *PNAS* 103(27): 10514-10519; 2006. *Selected by Faculty of 1000*.
28. Boyle JP, **Saeij JP**, Cleary MD, Boothroyd JC. Analysis of gene expression during development: lessons from the *Apicomplexa*. *Microbes and Infection* 8(6): 1623-1630; 2006. [Review article]
29. **Saeij JP**, Boyle JP, Boothroyd JC. Differences among the three major strains of *Toxoplasma gondii* and their specific interactions with the infected host. *Trends in Parasitology*. 21(10): 476-81; 2005.
30. **Saeij JP**[§], Boyle JP[§], Grigg ME, Arrizabalaga G, Boothroyd JC. Bioluminescence imaging of *Toxoplasma gondii* infection in living mice reveals dramatic differences between strains. *Infection and Immunity*. 73(2): 695-702; 2005. *Selected by Faculty of 1000*.

From graduate work

31. Huttenhuis HBT, Taverne-Thiele AJ, Grou CPO, Bergsma J, **Saeij JP**, Nakayasu C, Rombout JHWM. Ontogeny of the common carp (*Cyprinus carpio* L.) innate immune system. *Developmental & Comparative Immunology*. 30(6): 557-574; 2006.
32. Joerink M, **Saeij JP**, Stafford JL, Belosevic M, Wiegertjes GF. Animal models for the study of innate immunity: protozoan infections in fish. *Symposia of the Society for Experimental Biology*. 55:67-89; 2004.
33. **Saeij JP**, Groeneveld A, Van Rooijen N, Haenen OLM, Wiegertjes GF. Minor effect of depletion of

- resident macrophages from peritoneal cavity on resistance of common carp *Cyprinus carpio* to blood flagellates. *Diseases of aquatic organisms* 57: 67-75; 2003.
34. Engelsma MY, Stet RJM, **Saeij JP**, Verburg-van Kemenade BML. Differential expression and haplotypic variation of two interleukin-1 beta genes in the common carp (*Cyprinus carpio* L.). *Cytokine* 22: 21-32; 2003.
 35. **Saeij JP**, Stet RJM, de Vries B, van Muiswinkel WB, Wiegertjes GF. Molecular and functional characterization of carp TNF: a link between TNF polymorphism and trypanotolerance? *Developmental & Comparative Immunology*. 27: 29-41; 2003.
 36. **Saeij JP**, van Muiswinkel WB, van de Meent M, Amaral C, Wiegertjes GF. Different capacities of carp leukocytes to encounter nitric oxide-mediated stress: a role for the intracellular reduced glutathione pool. *Developmental & Comparative Immunology*. 27: 555-568; 2003.
 37. **Saeij JP**, Verburg-van Kemenade BML, van Muiswinkel WB, Wiegertjes GF. Daily handling reduces resistance of carp to *Trypanoplasma borreli*: *in vitro* modulatory effects of cortisol on leukocyte function and apoptosis. *Developmental & Comparative Immunology*. 27: 233-245; 2003.
 38. **Saeij JP**, de Vries BJ, Wiegertjes GF. The immune response of carp to *Trypanoplasma borreli*: kinetics of immune gene expression and polyclonal lymphocyte activation. *Developmental & Comparative Immunology*. 27: 859-874; 2003.
 39. **Saeij JP**, Stet RJM, Wiegertjes GF. Immune modulation by fish kinetoplastid parasites: a role for nitric oxide. *Parasitology* 124: 77-86; 2002.
 40. **Saeij JP**, Stet RJM, Groeneveld A, Verburg-van Kemenade BML, van Muiswinkel WB, Wiegertjes GF. Molecular and functional characterization of a fish inducible-type nitric oxide synthase. *Immunogenetics* 51: 339-346; 2000.
 41. **Saeij JP**, Wiegertjes GF, Stet RJM. Identification and characterization of a fish natural resistance-associated macrophage protein (NRAMP) cDNA. *Immunogenetics* 50: 60-66; 1999.
 42. Stet RJM, Kruiswijk CP, **Saeij JP**, Wiegertjes GF. Major histocompatibility genes in cyprinid fishes: theory and practice. *Immunological Reviews*. 166: 301-316; 1998. [Review article]
 43. Verburg-van Kemenade BML, **Saeij JP**, Flik G, Willems PHGM. Ca²⁺ signals during early lymphocyte activation in carp *Cyprinus carpio* L. *The Journal of Experimental Biology* 201: 591-598; 1998.

Book chapters and other contributions

1. Verburg-van Kemenade BML, Engelsma MY, Huisling MO, Kwang J, van Muiswinkel WB, **Saeij JP**, Metz JR, Flik G. Crosstalk between the neuro-endocrine and immune system in teleosts. In: *Perspective in Comparative Endocrinology: Unity and Diversity*, editors: Goos HJTh, Rastogi RK, Vaudry H, Pierantoni R, Monduzzi Editore, International Proceedings Division. 14th International Congress of Comparative Endocrinology, Sorrento (Napoli), Italy, May 26-30, p. 359-367; 2002.

Invited/Selected Presentations

- Susceptibility to infection: a complex interplay between host and parasite genotypes. Department of Microbiology and Immunology, University of Michigan Medical School, 2013. Invited.
- Susceptibility to infection: a complex interplay between host and parasite genotypes. Department of Molecular Biology and Microbiology, Tufts University School of Medicine, 2013. Invited.
- Susceptibility to infection: a complex interplay between host and parasite genotypes. Microbiology and Immunobiology department, Harvard Medical School, 2013. Invited.
- Susceptibility to infection: a complex interplay between host and parasite genotypes. Department of Microbial Pathogenesis, Yale University School of Medicine, 2013. Invited.
- Susceptibility to infection: a complex interplay between host and parasite genotypes. Medical Research Council (MRC), London, 2013. Invited.
- Host and parasite determinants that influence the outcome of *Toxoplasma gondii* infection. American Society for Microbiology (ASM), Division AA Lecturer, Annual ASM meeting, Denver, 2013. Invited.

- Host and parasite determinants that influence the outcome of *Toxoplasma gondii* infection. Department of Cellular Biology, The University of Georgia, 2013. Invited.
- Susceptibility to infection: a complex interplay between host and parasite genotypes. Harvard School of Public Health, Immunology and Infectious Diseases Department, 2013. Invited.
- Susceptibility to Infection: A Complex Interplay Between Host and Parasite Genotypes. Microbial Pathogens and Host Defense Seminar Series, Boston University Medical Center, 2013. Invited.
- Virulence factors of *Toxoplasma gondii*. Interdisciplinary forum on toxoplasmosis. Gottingen, Germany, 2013. Invited.
- Host and parasite determinants that influence the outcome of *Toxoplasma gondii* infection. The George Washington University, 2013. Invited.
- Host and parasite determinants that influence the outcome of *Toxoplasma gondii* infection. University of Chicago, 2012. Invited.
- Toxoplasma gondii* Polymorphic Effectors Determine Macrophage Polarization and Intestinal Inflammation. Annual meeting American Society for Microbiology, San Francisco, 2012. Selected.
- Toxoplasma strain* differences in host cell modulation and virulence. Gordon Conference Biology of Host-Parasite Interactions, Newport, RI, 2012. Selected.
- Genetic Analysis of Innate Immunity to Infection. New England Regional Center of Excellence (NERCE) 7th annual retreat, 2011. Invited.
- Molecular and genetic analysis of *Toxoplasma* polymorphic effectors involved in evasion and subversion of the host immune response. Microbiology and Physiological Systems, Umass Medical School, Worcester, 2011. Invited.
- Molecular and genetic analysis of *Toxoplasma* polymorphic effectors involved in evasion and subversion of the host immune response. Department of Pathobiology, University of Pennsylvania, 2011. Invited.
- Genetic Analysis of Innate Immunity to Infection. New England Regional Center of Excellence (NERCE), Biodefense and Emerging Infectious Disease. Innate Immunity Workshop 2011. Invited.
- Brazilian Protozoology Society Meeting, Iguazu Falls, 2011 (Declined). Invited.
- A role for superinfection in shaping *Toxoplasma* population structure. International Toxoplasma meeting, Canada. 2011. Selected.
- Two Polymorphic *Toxoplasma* Proteins Determine Strain-specific Modulation of the Host Inflammatory Response, Woods Hole Immunoparasitology Meeting, Woods Hole, 2011. Selected.
- Two Polymorphic *Toxoplasma* proteins determine strain-specific modulation of the host inflammatory response, Department of Cell Biology & Immunology, Wageningen University, The Netherlands, 2010. Invited.
- Genetic approaches to understand virulence and pathogenesis in *Toxoplasma gondii* infection, Tri-institutional 2010 Microbial Pathogenesis course, Rockefeller University, 2010. Invited.
- Two Polymorphic *Toxoplasma* proteins determine strain-specific modulation of the host inflammatory response, Regulatory Networks in Immunity and Inflammation Conference, Napa Valley, California, 2010. Selected.
- Genetic Approaches to Understand *Toxoplasma gondii* pathogenesis, Department of Biological Sciences, National University of Singapore, 2010. Invited.
- Identification and characterization of the *Toxoplasma* proteins involved in strain-specific modulation of inflammation, 10th International congress on toxoplasmosis, Netherlands, 2009. Selected.
- Genetic approaches to understand virulence and pathogenesis in *Toxoplasma gondii* infection, Dartmouth Medical School, 2009. Invited.
- Toxoplasma gondii* secreted kinase ROP16 mediates strain-specific differences in macrophage polarization Gordon Conference -Molecular Approaches for Emergent/Re-emergent Tropical Diseases-, Galveston, Texas, 2009. Invited.
- Molecular and Genetic Analysis of *Toxoplasma* Pathogenesis, Department of Microbiology, University of Tennessee - Knoxville, 2009. Invited.
- Toxoplasma* secreted kinase ROP16 mediates strain-specific differences in macrophage polarization, Immunology and Infectious Diseases Department, Harvard School of Public Health, 2008. Invited.

Toxoplasma gondii secreted kinase ROP16 mediates strain-specific differences in macrophage polarization, Toxoplasma centennial Congress, Buzios, Brazil, 2008. Selected.

Toxoplasma modulates the host immune response and co-opts host gene expression through injection of polymorphic protein kinases, NIH/NIAID, Bethesda, 2008. Invited.

Toxoplasma modulates the host immune response and co-opts host gene expression through injection of polymorphic protein kinases, American Society for Microbiology meeting, Boston, 2008. Invited.

Identification and characterization of *Toxoplasma* proteins involved in modulation of the host cell, Squam Lake regional *Toxoplasma* retreat, 2008.

Toxoplasma modulates the host immune response and co-opts host gene expression through injection of polymorphic protein kinases, Happycomplexan Symposium, Imperial College, London, 2007. Invited.

Research Contracts and Grants

Agency: National Institutes of Health (R01-AI080621)

Title: *Toxoplasma* strain-specific modulation of mouse immune cells

PI: Jeroen Saeij

Term: 07/10/09-06/30/14

Total Amount: \$2,030,600

Swanson Career Development Professorship in the Life Sciences, MIT

Title: Identifying how atypical strains of the intracellular parasite *Toxoplasma gondii* cause disease

Term: 07/01/12-06/30/14

Total Amount: \$100,000

Agency: New England Regional Center of Excellence: Biodefense and Emerging Infectious Diseases (U54 AI057159)

Title: NERP017: Genetic analysis of innate immunity to infection

PI: Jeroen Saeij

Term: 03/01/12-02/29/14

Total Amount: \$1,055,458

Agency: The Pew Scholars Program

Title: Genetic analysis of innate immunity to infection

PI: Jeroen Saeij

Term: 07/01/10-6/30/14

Total Amount: \$240,000

Agency: National Research Foundation (Singapore)

Title: No title

PI: Jeroen Saeij

Term: 10/01/09-01/01/13

Total Amount: \$200,000

Agency: American Heart Association

Title: Identification and characterization of the *Toxoplasma* protein that activates NF- κ B

PI: Jeroen Saeij

Term: 07/01/08-06/30/12

Total Amount: \$308,000

Agency: New England Regional Center of Excellence: Biodefense and Emerging Infectious Diseases

Title: Genetic analysis of innate immunity to infection

PI: Jeroen Saeij

Term: 02/15/10-01/31/12

Total Amount: \$408,376

Agency: Knights Templar Eye Foundation

Title: Serotyping *Toxoplasma* infections: correlating strain genotype to severity of infection

PI: Jeroen Saeij

Term: 07/01/09-06/30/11

Total Amount: \$40,000

Agency: Massachusetts Life Sciences Center

Title: Molecular characterization of *Toxoplasma* kinases involved in virulence

PI: Jeroen Saeij

Term: 09/01/08-08/31/11

Total Amount: \$300,000

John Reed Fund Award, MIT

Title: Characterization of *Toxoplasma* kinases involved in strain-specific modulation of the host cell.

PI: Jeroen Saeij

Term: 07/01/08

Total Amount: \$50,000