

# Stanford

---



## Justin L. Sonnenburg

Associate Professor of Microbiology and Immunology  
Microbiology & Immunology

### Bio

---

#### ACADEMIC APPOINTMENTS

- Associate Professor, Microbiology & Immunology
- Member, Bio-X
- Faculty Fellow, Stanford ChEM-H

#### HONORS AND AWARDS

- NIH Director's New Innovator Award, NIH (2009)
- Burroughs Wellcome Fund Investigators in Pathogenesis of Infectious Disease Award, Burroughs Wellcome Fund (2011)
- NIH Director's Pioneer Award, NIH (2017)

#### PROFESSIONAL EDUCATION

- BS, UC Davis , Biochemistry (1996)
- PhD, UC San Diego , Biomedical Sciences (2003)

#### LINKS

- Sonnenburg Lab Website: <http://sonnenburglab.stanford.edu>

### Research & Scholarship

---

#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

We are interested in the basic principles that govern interactions within the intestinal microbiota and between the microbiota and the host. To pursue these aims, we colonize germ-free (gnotobiotic) mice with simplified, model microbial communities, apply systems approaches (e.g. functional genomics), and use genetic tools for the host and microbes to gain mechanistic insight into emergent properties of the host-microbial super-organism.

#### CLINICAL TRIALS

- The RAMP Study - Rejuvenation of the Aging Microbiota With Prebiotics, Recruiting

### Teaching

---

#### COURSES

##### 2018-19

- Frontiers in Microbiology and Immunology: MI 250 (Aut, Win, Spr)
- Gut Microbiota in Health and Disease: BIOE 221G, GENE 208, MI 221 (Spr)

#### 2017-18

- Frontiers in Microbiology and Immunology: MI 250 (Aut, Win, Spr)

#### 2016-17

- Gut Microbiota in Health and Disease: BIOE 221G, MI 221 (Spr)

#### 2015-16

- Gut Microbiota in Health and Disease: MI 221 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Kyler Lugo, Daniel Sprockett

#### Postdoctoral Faculty Sponsor

Leah Guthrie, Shuo Han, Andrew Hryckowian

#### Doctoral Dissertation Advisor (AC)

Bryan Merrill

#### Orals Evaluator

Daniel Sprockett

#### Postdoctoral Research Mentor

Gabriela Fragiadakis, Sean Spencer

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Microbiology and Immunology (Phd Program)

## Publications

---

### PUBLICATIONS

- **Transient Osmotic Perturbation Causes Long-Term Alteration to the Gut Microbiota.** *Cell*  
Tropini, C., Moss, E. L., Merrill, B. D., Ng, K. M., Higginbottom, S. K., Casavant, E. P., Gonzalez, C. G., Fremin, B., Bouley, D. M., Elias, J. E., Bhatt, A. S., Huang, K. C., Sonnenburg, et al  
2018; 173 (7): 1742
- **An exclusive metabolic niche enables strain engraftment in the gut microbiota** *NATURE*  
Shepherd, E., DeLoache, W. C., Pruss, K. M., Whitaker, W. R., Sonnenburg, J. L.  
2018; 557 (7705): 434+
- **Microbiota-accessible carbohydrates suppress *Clostridium difficile* infection in a murine model.** *Nature microbiology*  
Hryckowian, A. J., Van Treuren, W., Smits, S. A., Davis, N. M., Gardner, J. O., Bouley, D. M., Sonnenburg, J. L.  
2018
- **Gut microbiome transition across a lifestyle gradient in Himalaya.** *PLoS biology*  
Jha, A. R., Davenport, E. R., Gautam, Y., Bhandari, D., Tandukar, S., Ng, K. M., Fragiadakis, G. K., Holmes, S., Gautam, G. P., Leach, J., Sherchand, J. B., Bustamante, C. D., Sonnenburg, et al  
2018; 16 (11): e2005396
- **Tunable Expression Tools Enable Single-Cell Strain Distinction in the Gut Microbiome** *CELL*  
Whitaker, W. R., Shepherd, E. S., Sonnenburg, J. L.  
2017; 169 (3): 538-?
- **A gut bacterial pathway metabolizes aromatic amino acids into nine circulating metabolites.** *Nature*

- Dodd, D., Spitzer, M. H., Van Treuren, W., Merrill, B. D., Hryckowian, A. J., Higginbottom, S. K., Le, A., Cowan, T. M., Nolan, G. P., Fischbach, M. A., Sonnenburg, J. L.  
2017; 551 (7682): 648–52
- **Seasonal cycling in the gut microbiome of the Hadza hunter-gatherers of Tanzania.** *Science (New York, N.Y.)*  
Smits, S. A., Leach, J., Sonnenburg, E. D., Gonzalez, C. G., Lichtman, J. S., Reid, G., Knight, R., Manjurano, A., Changalucha, J., Elias, J. E., Dominguez-Bello, M. G., Sonnenburg, J. L.  
2017; 357 (6353): 802–6
  - **Diet-microbiota interactions as moderators of human metabolism** *NATURE*  
Sonnenburg, J. L., Backhed, F.  
2016; 535 (7610): 56-64
  - **Diet-induced extinctions in the gut microbiota compound over generations.** *Nature*  
Sonnenburg, E. D., Smits, S. A., Tikhonov, M., Higginbottom, S. K., Wingreen, N. S., Sonnenburg, J. L.  
2016; 529 (7585): 212-215
  - **Quantitative Imaging of Gut Microbiota Spatial Organization** *CELL HOST & MICROBE*  
Earle, K. A., Billings, G., Sigal, M., Lichtman, J. S., Hansson, G. C., Elias, J. E., Amieva, M. R., Huang, K. C., Sonnenburg, J. L.  
2015; 18 (4): 478-488
  - **Starving our Microbial Self: The Deleterious Consequences of a Diet Deficient in Microbiota-Accessible Carbohydrates** *CELL METABOLISM*  
Sonnenburg, E. D., Sonnenburg, J. L.  
2014; 20 (5): 779-786
  - **Microbiota-liberated host sugars facilitate post-antibiotic expansion of enteric pathogens** *NATURE*  
Ng, K. M., Ferreyra, J. A., Higginbottom, S. K., Lynch, J. B., Kashyap, P. C., Gopinath, S., Naidu, N., Choudhury, B., Weimer, B. C., Monack, D. M., Sonnenburg, J. L.  
2013; 502 (7469): 96-?
  - **Specificity of Polysaccharide Use in Intestinal Bacteroides Species Determines Diet-Induced Microbiota Alterations** *CELL*  
Sonnenburg, E. D., Zheng, H., Joglekar, P., Higginbottom, S. K., Firbank, S. J., Bolam, D. N., Sonnenburg, J. L.  
2010; 141 (7): 1241-U256
  - **Western diet regulates immune status and the response to LPS-driven sepsis independent of diet-associated microbiome.** *Proceedings of the National Academy of Sciences of the United States of America*  
Napier, B. A., Andres-Terre, M., Massis, L. M., Hryckowian, A. J., Higginbottom, S. K., Cumnock, K., Casey, K. M., Haileselassie, B., Lugo, K. A., Schneider, D. S., Sonnenburg, J. L., Monack, D. M.  
2019; 116 (9): 3688–94
  - **Considerations for best practices in studies of fiber or other dietary components and the intestinal microbiome** *AMERICAN JOURNAL OF PHYSIOLOGY- ENDOCRINOLOGY AND METABOLISM*  
Klurfeld, D. M., Davis, C. D., Karp, R. W., Allen-Vercoe, E., Chang, E. B., Chassaing, B., Fahey, G. C., Hamaker, B. R., Holscher, H. D., Lampe, J. W., Marette, A., Martens, E., O'Keefe, et al  
2018; 315 (6): E1087–E1097
  - **A Microbiota Assimilation.** *Cell metabolism*  
Sonnenburg, J., Sonnenburg, E.  
2018; 28 (5): 675–77
  - **Clostridioides difficile uses amino acids associated with gut microbial dysbiosis in a subset of patients with diarrhea.** *Science translational medicine*  
Battaglioli, E. J., Hale, V. L., Chen, J., Jeraldo, P., Ruiz-Mojica, C., Schmidt, B. A., Rekdal, V. M., Till, L. M., Huq, L., Smits, S. A., Moor, W. J., Jones-Hall, Y., Smyrk, et al  
2018; 10 (464)
  - **Links between environment, diet, and the hunter-gatherer microbiome.** *Gut microbes*  
Fragiadakis, G. K., Smits, S. A., Sonnenburg, E. D., Van Treuren, W., Reid, G., Knight, R., Manjurano, A., Changalucha, J., Dominguez-Bello, M. G., Leach, J., Sonnenburg, J. L.  
2018: 1–12
  - **A Gut Commensal-Produced Metabolite Mediates Colonization Resistance to Salmonella Infection.** *Cell host & microbe*

- Jacobson, A., Lam, L., Rajendram, M., Tamburini, F., Honeycutt, J., Pham, T., Van Treuren, W., Pruss, K., Stabler, S. R., Lugo, K., Bouley, D. M., Vilches-Moure, J. G., Smith, et al  
2018
- **Gut Microbiota-Produced Tryptamine Activates an Epithelial G-Protein-Coupled Receptor to Increase Colonic Secretion** *CELL HOST & MICROBE*  
Bhattarai, Y., Williams, B. B., Battaglioli, E. J., Whitaker, W. R., Till, L., Grover, M., Linden, D. R., Akiba, Y., Kandimalla, K. K., Zachos, N. C., Kaunitz, J. D., Sonnenburg, J. L., Fischbach, et al  
2018; 23 (6): 775-+
  - **Genetic Variation of the SusC/SusD Homologs from a Polysaccharide Utilization Locus Underlies Divergent Fructan Specificities and Functional Adaptation in Bacteroides thetaiotaomicron Strains.** *mSphere*  
Joglekar, P., Sonnenburg, E. D., Higginbottom, S. K., Earle, K. A., Morland, C., Shapiro-Ward, S., Bolam, D. N., Sonnenburg, J. L.  
2018; 3 (3)
  - **Single-cell transcriptomics of 20 mouse organs creates a Tabula Muris.** *Nature*  
2018; 562 (7727): 367-72
  - **Dynamic Light Scattering Microrheology Reveals Multiscale Viscoelasticity of Polymer Gels and Precious Biological Materials** *ACS CENTRAL SCIENCE*  
Krajina, B. A., Tropini, C., Zhu, A., DiGiacomo, P., Sonnenburg, J. L., Heilshorn, S. C., Spakowitz, A. J.  
2017; 3 (12): 1294-1303
  - **The Gut Microbiome: Connecting Spatial Organization to Function** *CELL HOST & MICROBE*  
Tropini, C., Earle, K. A., Huang, K. C., Sonnenburg, J. L.  
2017; 21 (4): 433-442
  - **Commensal Microbes and Hair Follicle Morphogenesis Coordinately Drive Treg Migration into Neonatal Skin** *CELL HOST & MICROBE*  
Scharschmidt, T. C., Vasquez, K. S., Pauli, M. L., Leitner, E. G., Chu, K., Truong, H., Lowe, M. M., Rodriguez, R. S., Ali, N., Laszik, Z. G., Sonnenburg, J. L., Millar, S. E., Rosenblum, et al  
2017; 21 (4): 467-?
  - **The emerging metabolic view of Clostridium difficile pathogenesis.** *Current opinion in microbiology*  
Hryckowian, A. J., Pruss, K. M., Sonnenburg, J. L.  
2016; 35: 42-47
  - **Modulation of a Circulating Uremic Solute via Rational Genetic Manipulation of the Gut Microbiota** *CELL HOST & MICROBE*  
Devlin, A. S., Marcobal, A., Dodd, D., Nayfach, S., Plummer, N., Meyer, T., Pollard, K. S., Sonnenburg, J. L., Fischbach, M. A.  
2016; 20 (6): 709-715
  - **Correlated gene expression encoding serotonin (5-HT) receptor 4 and 5-HT transporter in proximal colonic segments of mice across different colonization states and sexes.** *Neurogastroenterology and motility*  
Reigstad, C. S., Linden, D. R., Szurszewski, J. H., Sonnenburg, J. L., Farrugia, G., Kashyap, P. C.  
2016; 28 (9): 1443-1448
  - **Individualized Responses of Gut Microbiota to Dietary Intervention Modeled in Humanized Mice.** *mSystems*  
Smits, S. A., Marcobal, A., Higginbottom, S., Sonnenburg, J. L., Kashyap, P. C.  
2016; 1 (5)
  - **Host-Microbiota Interactions in the Pathogenesis of Antibiotic-Associated Diseases** *CELL REPORTS*  
Lichtman, J. S., Ferreyra, J. A., Ng, K. M., Smits, S. A., Sonnenburg, J. L., Elias, J. E.  
2016; 14 (5): 1049-1061
  - **Nutrition: A personal forecast.** *Nature*  
Sonnenburg, E. D., Sonnenburg, J. L.  
2015; 528 (7583): 484-486
  - **A small-molecule antivirulence agent for treating Clostridium difficile infection.** *Science translational medicine*  
Bender, K. O., Garland, M., Ferreyra, J. A., Hryckowian, A. J., Child, M. A., Puri, A. W., Solow-Cordero, D. E., Higginbottom, S. K., Segal, E., Banaei, N., Shen, A., Sonnenburg, J. L., Bogyo, et al  
2015; 7 (306): 306ra148-?
  - **A small-molecule antivirulence agent for treating Clostridium difficile infection** *SCIENCE TRANSLATIONAL MEDICINE*

- Bender, K. O., Garland, M., Ferreyra, J. A., Hryckowian, A. J., Child, M. A., Puri, A. W., Solow-Cordero, D. E., Higginbottom, S. K., Segal, E., Banaei, N., Shen, A., Sonnenburg, J. L., Bogyo, et al  
2015; 7 (306)
- **Monitoring host responses to the gut microbiota** *ISME JOURNAL*  
Lichtman, J. S., Sonnenburg, J. L., Elias, J. E.  
2015; 9 (9): 1908-1915
  - **Metabolome progression during early gut microbial colonization of gnotobiotic mice** *SCIENTIFIC REPORTS*  
Marcobal, A., Yusufaly, T., Higginbottom, S., Snyder, M., Sonnenburg, J. L., Mias, G. I.  
2015; 5
  - **Gut microbes promote colonic serotonin production through an effect of short-chain fatty acids on enterochromaffin cells.** *FASEB journal*  
Reigstad, C. S., Salmons, C. E., Rainey, J. F., Szurszewski, J. H., Linden, D. R., Sonnenburg, J. L., Farrugia, G., Kashyap, P. C.  
2015; 29 (4): 1395-1403
  - **Microbiome engineering.** *Nature*  
Sonnenburg, J. L.  
2015; 518 (7540): S10-?
  - **Metabolome progression during early gut microbial colonization of gnotobiotic mice.** *Scientific reports*  
Marcobal, A., Yusufaly, T., Higginbottom, S., Snyder, M., Sonnenburg, J. L., Mias, G. I.  
2015; 5: 11589-?
  - **Your gut microbiome, deconstructed.** *Nature biotechnology*  
Dodd, D., Tropini, C., Sonnenburg, J. L.  
2015; 33 (12): 1238-40
  - **Gut Microbiota-Produced Succinate Promotes C-difficile Infection after Antibiotic Treatment or Motility Disturbance** *CELL HOST & MICROBE*  
Ferreyra, J. A., Wu, K. J., Hryckowian, A. J., Bouley, D. M., Weimer, B. C., Sonnenburg, J. L.  
2014; 16 (6): 770-777
  - **Reprogramming of gut microbiome energy metabolism by the FUT2 Crohn's disease risk polymorphism** *ISME JOURNAL*  
Tong, M., McHardy, I., Ruegger, P., Goudarzi, M., Kashyap, P. C., Haritunians, T., Li, X., Graeber, T. G., Schwager, E., Huttenhower, C., Fornace, A. J., Sonnenburg, J. L., McGovern, et al  
2014; 8 (11): 2193-2206
  - **The Enteric Two-Step: nutritional strategies of bacterial pathogens within the gut** *CELLULAR MICROBIOLOGY*  
Ferreyra, J. A., Ng, K. M., Sonnenburg, J. L.  
2014; 16 (7): 993-1003
  - **Rapid evolution of binding specificities and expression patterns of inhibitory CD33-related Siglecs in primates** *FASEB JOURNAL*  
Padler-Karavani, V., Hurtado-Ziola, N., Chang, Y., Sonnenburg, J. L., Ronaghy, A., Yu, H., Verhagen, A., Nizet, V., Chen, X., Varki, N., Varki, A., Angata, T.  
2014; 28 (3): 1280-1293
  - **Gut microbes take their vitamins.** *Cell host & microbe*  
Sonnenburg, E. D., Sonnenburg, J. L.  
2014; 15 (1): 5-6
  - **Host-centric Proteomics of Stool: A Novel Strategy Focused on intestinal Responses to the Gut Microbiota.** *Molecular & cellular proteomics*  
Lichtman, J. S., Marcobal, A., Sonnenburg, J. L., Elias, J. E.  
2013; 12 (11): 3310-3318
  - **Genetically dictated change in host mucus carbohydrate landscape exerts a diet-dependent effect on the gut microbiota** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kashyap, P. C., Marcobal, A., Ursell, L. K., Smits, S. A., Sonnenburg, E. D., Costello, E. K., Higginbottom, S. K., Domino, S. E., Holmes, S. P., Relman, D. A., Knight, R., Gordon, J. I., Sonnenburg, et al  
2013; 110 (42): 17059-17064
  - **Microbiota-liberated host sugars facilitate post-antibiotic expansion of enteric pathogens.** *Nature*

- Ng, K. M., Ferreyra, J. A., Higginbottom, S. K., Lynch, J. B., Kashyap, P. C., Gopinath, S., Naidu, N., Choudhury, B., Weimer, B. C., Monack, D. M., Sonnenburg, J. L.  
2013; 502 (7469): 96-99
- **A metabolomic view of how the human gut microbiota impacts the host metabolome using humanized and gnotobiotic mice.** *ISME journal*  
Marcobal, A., Kashyap, P. C., Nelson, T. A., Aronov, P. A., Donia, M. S., Spormann, A., Fischbach, M. A., Sonnenburg, J. L.  
2013; 7 (10): 1933-1943
  - **A refined palate: bacterial consumption of host glycans in the gut.** *Glycobiology*  
Marcobal, A., Southwick, A. M., Earle, K. A., Sonnenburg, J. L.  
2013; 23 (9): 1038-1046
  - **A refined palate: Bacterial consumption of host glycans in the gut** *GLYCOBIOLOGY*  
Marcobal, A., Southwick, A. M., Earle, K. A., Sonnenburg, J. L.  
2013; 23 (9): 1038-?
  - **Production of alpha-Galactosylceramide by a Prominent Member of the Human Gut Microbiota** *PLOS BIOLOGY*  
Brown, L. C., Penaranda, C., Kashyap, P. C., Williams, B. B., Clardy, J., Kronenberg, M., Sonnenburg, J. L., Comstock, L. E., Bluestone, J. A., Fischbach, M. A.  
2013; 11 (7)
  - **Production of a-galactosylceramide by a prominent member of the human gut microbiota.** *PLoS biology*  
Wieland Brown, L. C., Penaranda, C., Kashyap, P. C., Williams, B. B., Clardy, J., Kronenberg, M., Sonnenburg, J. L., Comstock, L. E., Bluestone, J. A., Fischbach, M. A.  
2013; 11 (7)
  - **Integrative analysis of the microbiome and metabolome of the human intestinal mucosal surface reveals exquisite inter-relationships.** *Microbiome*  
McHardy, I. H., Goudarzi, M., Tong, M., Ruegger, P. M., Schwager, E., Weger, J. R., Graeber, T. G., Sonnenburg, J. L., Horvath, S., Huttenhower, C., McGovern, D. P., Fornace, A. J., Borneman, et al  
2013; 1 (1): 17-?
  - **Complex Interactions Among Diet, Gastrointestinal Transit, and Gut Microbiota in Humanized Mice** *GASTROENTEROLOGY*  
Kashyap, P. C., Marcobal, A., Ursell, L. K., Larauche, M., Duboc, H., Earle, K. A., Sonnenburg, E. D., Ferreyra, J. A., Higginbottom, S. K., Million, M., Tache, Y., Pasricha, P. J., Knight, et al  
2013; 144 (5): 967-977
  - **Integrative analysis of the microbiome and metabolome of the human intestinal mucosal surface reveals exquisite inter-relationships** *MICROBIOME*  
McHardy, I. H., Goudarzi, M., Tong, M., Ruegger, P. M., Schwager, E., Weger, J. R., Graeber, T. G., Sonnenburg, J. L., Horvath, S., Huttenhower, C., McGovern, D. P., Fornace, A. J., Borneman, et al  
2013; 1
  - **Molecular Analysis of Model Gut Microbiotas by Imaging Mass Spectrometry and Nanodesorption Electrospray Ionization Reveals Dietary Metabolite Transformations** *ANALYTICAL CHEMISTRY*  
Rath, C. M., Alexandrov, T., Higginbottom, S. K., Song, J., Milla, M. E., Fischbach, M. A., Sonnenburg, J. L., Dorrestein, P. C.  
2012; 84 (21): 9259-9267
  - **Prioritization of a plant polysaccharide over a mucus carbohydrate is enforced by a Bacteroides hybrid two-component system** *MOLECULAR MICROBIOLOGY*  
Lynch, J. B., Sonnenburg, J. L.  
2012; 85 (3): 478-491
  - **Bacteroides in the Infant Gut Consume Milk Oligosaccharides via Mucus-Utilization Pathways** *CELL HOST & MICROBE*  
Marcobal, A., Barboza, M., Sonnenburg, E. D., Pudlo, N., Martens, E. C., Desai, P., Lebrilla, C. B., Weimer, B. C., Mills, D. A., German, J. B., Sonnenburg, J. L.  
2011; 10 (5): 507-514
  - **Eating For Two: How Metabolism Establishes Interspecies Interactions in the Gut** *CELL HOST & MICROBE*  
Fischbach, M. A., Sonnenburg, J. L.  
2011; 10 (4): 336-347
  - **Community Health Care: Therapeutic Opportunities in the Human Microbiome** *SCIENCE TRANSLATIONAL MEDICINE*  
Sonnenburg, J. L., Fischbach, M. A.  
2011; 3 (78)

- **Mechanistic insight into polysaccharide use within the intestinal microbiota.** *Gut microbes*  
Bolam, D. N., Sonnenburg, J. L.  
2011; 2 (2): 86-90
- **PhyloChip microarray analysis reveals altered gastrointestinal microbial communities in a rat model of colonic hypersensitivity** *NEUROGASTROENTEROLOGY AND MOTILITY*  
Nelson, T. A., Holmes, S., ALEKSEYENKO, A. V., Shenoy, M., DeSantis, T., Wu, C. H., Andersen, G. L., Winston, J., Sonnenburg, J., Pasricha, P. J., Spormann, A.  
2011; 23 (2)
- **The intestinal microbiota and viral susceptibility** *FRONTIERS IN MICROBIOLOGY*  
Pfeiffer, J. K., Sonnenburg, J. L.  
2011; 2
- **MICROBIOLOGY Genetic pot luck** *NATURE*  
Sonnenburg, J. L.  
2010; 464 (7290): 837-838
- **Genomic and metabolic studies of the impact of probiotics on a model gut symbiont and host** *PLOS BIOLOGY*  
Sonnenburg, J. L., Chen, C. T., Gordon, J. I.  
2006; 4 (12): 2213-2226
- **A hybrid two-component system protein of a prominent human gut symbiont couples glycan sensing in vivo to carbohydrate metabolism** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Sonnenburg, E. D., Sonnenburg, J. L., Manchester, J. K., Hansen, E. E., Chiang, H. C., Gordon, J. I.  
2006; 103 (23): 8834-8839
- **Operon prediction without a training set** *BIOINFORMATICS*  
Westover, B. P., Buhler, J. D., Sonnenburg, J. L., Gordon, J. I.  
2005; 21 (7): 880-888
- **Glycan foraging in vivo by an intestine-adapted bacterial symbiont** *SCIENCE*  
Sonnenburg, J. L., Xu, J., Leip, D. D., Chen, C. H., Westover, B. P., Weatherford, J., Buhler, J. D., Gordon, J. I.  
2005; 307 (5717): 1955-1959
- **Getting a grip on things: how do communities of bacterial symbionts become established in our intestine?** *NATURE IMMUNOLOGY*  
Sonnenburg, J. L., Angenent, L. T., Gordon, J. I.  
2004; 5 (6): 569-573
- **A uniquely human consequence of domain-specific functional adaptation in a sialic acid-binding receptor** *GLYCOBIOLOGY*  
Sonnenburg, J. L., Altheide, T. K., Varki, A.  
2004; 14 (4): 339-346
- **Characterization of the acid stability of glycosidically linked neuraminic acid - Use in detecting de-N-acetyl-gangliosides in human melanoma** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Sonnenburg, J. L., van Halbeek, H., Varki, A.  
2002; 277 (20): 17502-17510
- **Effects of sialic acid substitutions on recognition by Sambucus nigra agglutinin and Maackia amurensis hemagglutinin** *ANALYTICAL BIOCHEMISTRY*  
Brinkman-Van der Linden, E. C., Sonnenburg, J. L., Varki, A.  
2002; 303 (1): 98-104
- **De-N-acetyl-gangliosides in humans: Unusual subcellular distribution of a novel tumor antigen** *CANCER RESEARCH*  
Chammas, R., Sonnenburg, J. L., Watson, N. E., Tai, T., Farquhar, M. G., Varki, N. M., Varki, A.  
1999; 59 (6): 1337-1346
- **Resolution of subunit interactions and cytoplasmic subcomplexes of the yeast vacuolar proton-translocating ATPase** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Tomashek, J. J., Sonnenburg, J. L., Artimovich, J. M., Klionsky, D. J.  
1996; 271 (17): 10397-10404