

# Jeremy D. Scheff

EMAIL: [jdscheff@gmail.com](mailto:jdscheff@gmail.com)  
PHONE: 609-425-3034

WEBSITE: <http://dumbmatter.com/>  
ADDRESS: 1510 Nottinghill Ln, Hamilton, NJ 08619

## WORK EXPERIENCE

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| Sep 2014 - Present  | <b>Covance</b> – Princeton, NJ<br><i>Data Scientist</i>  |
| Aug 2013 - Aug 2014 | <b>DoD Biotechnology HPC Software Applications Institute (BHSAI)</b> – Frederick, MD<br><i>Research Scientist I</i><br>Created a novel mathematical model of the heat shock response (manuscript in preparation). Initiated a large <i>in vitro</i> experimental project on cell type heterogeneity in the heat shock response in collaboration with the US Army Center for Environmental Health Research (USACEHR). |

## EDUCATION

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| Sep 2008 - Aug 2013 | PhD in Biomedical Engineering – Rutgers University, New Brunswick, NJ<br>GPA: 3.88<br>Thesis: “Heart rate variability and rhythmic influences in human endotoxemia”<br>Advisor: Ioannis P. Androulakis  |
| Sep 2004 - May 2008 | BS in Biomedical Engineering, Minor in Mathematics – Rutgers University, New Brunswick, NJ<br>GPA: 3.91 (overall), 3.97 (BME major), 4.00 (Math minor)<br>Thesis: “A symbolic representation for the analysis of gene expression data”<br>Advisor: Ioannis P. Androulakis |

## AWARDS AND SCHOLARSHIPS

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| 2014      | Rutgers School of Engineering Outstanding Graduate Student Award  |
| 2012-2013 | University and Louis Bevier Graduate Fellowship from the Rutgers Graduate School-New Brunswick                          |
| 2010      | Computing and Systems Technology (CAST) Graduate Travel Award for the annual AIChE meeting in Salt Lake City, UT        |
| 2010      | Travel award for the 10th IEEE International Conference on Bioinformatics and Bioengineering (BIBE) in Philadelphia, PA |
| 2008-2010 | NSF Graduate Research Fellowship Honorable Mention (Yes, I won HM 3 years in a row...)                                  |
| 2008-2009 | Eugene V. Du Bois Fellowship from the Rutgers University School of Engineering  |
| 2008      | James J. Slade Scholars Program   |

2007-2008	Alpha Eta Mu Beta Biomedical Engineering Honor Society (Webmaster)
2006-2008	Rutgers Biomedical Engineering Honors Academy
2006	Class of 1925 Scholarship – Engineering
2004-2008	Outstanding Scholars Recruitment Program (OSRP) Full Scholarship from Rutgers University
2004-2008	Dean's list (all semesters)

## JOURNAL PUBLICATIONS

- 2015 | Scheff JD, Stallings JD, Reifman J, Rakesh V: **Mathematical modeling of the heat-shock response in HeLa cells.** *Biophys J* 2015, **109**(2):182–193. PMID: 26200855, doi:10.1016/j.bpj.2015.06.027
- 2014 | Scheff JD, Griffel B, Corbett SA, Calvano SE, Androulakis IP: **On heart rate variability and autonomic activity in homeostasis and in systemic inflammation.** *Math Biosc* 2014, **252**:36–44. PMID: 24680646, doi:10.1016/j.mbs.2014.03.010
- 2013 | Scheff JD, Calvano SE, Androulakis IP: **Predicting critical transitions in a model of systemic inflammation.** *J Theor Biol* 2013, **7**(338):9–15. PMID: 23973206, doi:10.1016/j.jtbi.2013.08.011
- Scheff JD, Mavroudis PD, Calvano SE, Androulakis IP: **Translational applications of evaluating physiologic variability in human endotoxemia.** *J Clin Monit Comput* 2013, **27**(4):405–15. PMID: 23203205, doi:10.1007/s10877-012-9418-1
- Scheff JD, Mavroudis PD, Foteinou PT, An G, Calvano SE, Doyle J, Dick TE, Lowry SF, Vodovotz Y, Androulakis IP: **A multiscale modeling approach to inflammation: A case study in human endotoxemia.** *J Comp Phys* 2013, **244**:279–89. doi:10.1016/j.jcp.2012.09.024
- 2012 | Scheff JD, Mavroudis PD, Foteinou PT, Calvano SE, Androulakis IP: **Modeling physiologic variability in human endotoxemia.** *Crit Rev Biomed Eng* 2012, **40**(4):313–322. PMID: 23140122, doi:10.1615/CritRevBiomedEng.v40.i4.60
- Mavroudis PD, Scheff JD, Calvano SE, Androulakis IP: **Systems biology of circadian-immune interactions.** *J Innate Immun* 2012, **5**(2):153–162. PMID: 23006670, doi:10.1159/000342427
- Dick TE, Molkov YI, Nieman G, Hsieh YH, Jacono FJ, Doyle J, Scheff JD, Calvano SE, Androulakis IP, An G, Vodovotz Y: **Linking inflammation, cardiorespiratory variability, and neural control in acute inflammation via computational modeling.** *Front Physiol* 2012, **3**:222. PMID: 22783197, doi:10.3389/fphys.2012.00222
- Mavroudis PD, Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Entrainment of peripheral clock genes by cortisol.** *Physiol Genomics* 2012, **44**(11):607–621. PMID: 22510707, doi:10.1152/physiolgenomics.00001.2012
- Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Transcriptional implications of ultradian glucocorticoid secretion, in homeostasis and in the acute stress response.** *Physiol Genomics* 2012, **44**(2):121–129. PMID: 22128089, doi:10.1152/physiolgenomics.00128.2011
- 2011 | Scheff JD, Kosmides AK, Calvano SE, Lowry SF, Androulakis IP: **Pulsatile glucocorticoid secretion: origins and downstream effects.** *IEEE Trans Biomed Eng* 2011, **58**(12):3504–3507. PMID: 21775253, doi:10.1109/TBME.2011.2162236
- Scheff JD, Mavroudis PD, Calvano SE, Lowry SF, Androulakis IP: **Modeling autonomic regulation of cardiac function and heart rate variability in human endotoxemia.** *Physiol Genomics* 2011, **43**(16):951–964. PMID: 21673075, doi:10.1152/physiolgenomics.00040.2011
- Scheff JD, Almon RR, DuBois DC, Jusko WJ, Androulakis IP: **Assessment of pharmacologic area under the curve when baselines are variable.** *Pharm Res* 2011, **28**(5):1081–1089. PMID: 21234658, doi:10.1007/s11095-010-0363-8

- 2010 | Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Modeling the influence of circadian rhythms on the acute inflammatory response.** *J Theor Biol* 2010, 264(3):1068–1076. PMID: 20307551, doi:10.1016/j.jtbi.2010.03.026
- Scheff JD, Almon RR, DuBois DC, Jusko WJ, Androulakis IP: **A new symbolic representation for the identification of informative genes in replicated microarray experiments.** *OMICS* 2010, 14(3):239–248. PMID: 20455749, doi:10.1089/omi.2010.0005

## BOOK CHAPTERS

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- 2013 | Scheff JD, Calvano SE, Androulakis IP: **Multi-scale equation-based models: Insights for Inflammation and Physiological Variability.** In *Complex Systems and Computational Biology Approaches to Acute Inflammation*. Edited by: Vodovotz Y, An G: Springer; 2013:125–142.
- Scheff JD, Mavroudis PD, Calvano SE, Lowry SF, Androulakis IP: **Autonomic dysfunction in SIRS and sepsis.** In *Brain Disorders in Critical Illness*. Edited by: Stevens RD, Sharshar T, Ely EW: Cambridge University Press; 2013:192–199.
- 2010 | Scheff JD, Foteinou PT, Calvano SE, Lowry SF, Androulakis IP: **Dynamic Models of Disease Progression: Toward a Multiscale Model of Systemic Inflammation in Humans.** In *Process Systems Engineering*. Edited by: Pistikopoulos E, Georgiadis M, Dua V: Wiley-VCH; 2010:321–367.
- Foteinou PT, Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Approaches Towards a Multiscale Model of Systemic Inflammation in Humans.** In *Methods in Bioengineering: Alternatives to Animal Testing*. Edited by: Maguire T, Novik E: Artech House; 2010:61–98.

## MEETING PRESENTATIONS

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\* Presenting author, Talk

\*\* Presenting author, Poster

- 2012 | Scheff JD\*, Calvano SE, Androulakis IP: **Analysis of Critical Transitions in a Model of Human Endotoxemia.** *AIChE Annual Meeting*, Oct 28–Nov 2, 2012, Pittsburgh, PA.
- Scheff JD\*\*, Calvano SE, Androulakis IP: **Analysis of Critical Transitions in a Model of Human Endotoxemia.** *BMES Annual Meeting*, Oct 24–Oct 27, 2012, Atlanta, GA.
- 2011 | Scheff JD\*, Calvano SE, Lowry SF, Androulakis IP: **Multiscale variability in human endotoxemia: circadian, ultradian, and higher frequency rhythms in heart rate variability.** *AIChE Annual Meeting*, Oct 16–21, 2011, Minneapolis, MN.
- Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **Implications of ultradian rhythms in glucocorticoid secretion.** *AIChE Annual Meeting*, Oct 16–21, 2011, Minneapolis, MN.
- Mavroudis PD\*, Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Peripheral Blood Mononuclear Cell Entrainment by Cortisol.** *AIChE Annual Meeting*, Oct 16–21, 2011, Minneapolis, MN.
- Scheff JD\*\*, Kosmides AK, Calvano SE, Lowry SF, Androulakis IP: **Modeling Transcriptional Responses to Ultradian Glucocorticoid Rhythms.** *BMES Annual Meeting*, Oct 12–15, 2011, Hartford, CT.
- Mavroudis PD\*\*, Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Peripheral Blood Mononuclear Cell Entrainment by Cortisol.** *BMES Annual Meeting*, Oct 12–15, 2011, Hartford, CT.
- Scheff JD\*\*, Doyle J, Vodovotz Y, Androulakis IP: **A stochastic analysis of the inflammatory response.** *10th International Conference on Complexity in Acute Illness*, Sept 9–11, 2011, Bonn, Germany.

- Abstract in *J Crit Care* 2012, 27(3):e6-e7. doi:10.1016/j.jcrc.2012.01.024
- Scheff JD\*, Calvano SE, Lowry SF, Androulakis IP: **Multiscale rhythmic influences on heart rate variability in human endotoxemia.** *10th International Conference on Complexity in Acute Illness*, Sept 9–11, 2011, Bonn, Germany.
- Abstract in *J Crit Care* 2012, 27(3):e3. doi:10.1016/j.jcrc.2012.01.017
- Scheff JD, Mavroudis PD, Calvano SE, Lowry SF, Androulakis IP\*: **Towards in silico models of de-complexification in human endotoxemia.** *21st European Symposium on Computer Aided Process Engineering*, May 29–June 1, 2011, Chalkidiki, Greece.
- Paper in *Computer Aided Chemical Engineering* 2011, 29:1485–1489. doi:10.1016/B978-0-444-54298-4.50076-3
- Kosmidis AK\*\*, Scheff JD, Calvano SE, Lowry SF, Androulakis IP: **Understanding Homeostatic Dynamics of the HPA Axis Using a Glucocorticoid Pulsatile Model.** *IEEE 37th Annual Northeast Bioengineering Conference*, Apr 1–3, 2011, Troy, NY.
- Paper in *Proceedings of the IEEE 37th Annual Northeast Bioengineering Conference* 2011. doi:10.1109/NEBC.2011.5778632
- 2010 | Scheff JD\*, Calvano SE, Lowry SF, Androulakis IP: **The influence of circadian rhythms on the inflammatory response.** *AIChE Annual Meeting*, Nov 7–12, 2010, Salt Lake City, UT.
- Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **A stochastic ensemble model of human endotoxemia.** *AIChE Annual Meeting*, Nov 7–12, 2010, Salt Lake City, UT.
- Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **Modeling Circadian Rhythms in Human Endotoxemia.** *BMES Annual Meeting*, Oct 6–9, 2010, Austin, TX.
- Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **Modeling Inflammation with an Ensemble of Stochastic Cells.** *BMES Annual Meeting*, Oct 6–9, 2010, Austin, TX.
- Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **Decreased communication leads to diminished physiologic variability in a multiscale model of inflammation.** *9th International Conference on Complexity in Acute Illness*, Sept 10–12, 2010, Atlanta, GA.
- Abstract in *J Crit Care* 2011, 26(2):e3. doi:10.1016/j.jcrc.2010.12.023
- Scheff JD\*, Calvano SE, Lowry SF, Androulakis IP: **Modeling Circadian Rhythms in Inflammation.** *10th IEEE International Conference on Bioinformatics and Bioengineering*, May 31–June 3, 2010, Thomas Jefferson University, Philadelphia, PA.
- Paper in *Proceedings of the 10th IEEE International Conference on Bioinformatics and Bioengineering* 2010, 197–202. doi:10.1109/BIBE.2010.39
- 2009 | Scheff JD\*\*, Calvano SE, Lowry SF, Androulakis IP: **Implications of circadian rhythms in modeling inflammation.** *IBM Medical Informatics Day*, Dec 4, 2009, IBM T.J. Watson Research Center, Hawthorne, NY.

## NON-SCIENTIFIC WORK EXPERIENCE

- 2013-Present | **Basketball GM**, <http://basketball-gm.com/>  
*Web Developer*  
 Created a single-player web-based basketball simulation video game. Every month, 10,000 people play the game for a combined total of over 25,000 hours.
- 2000-2008 | **Avatic**, <http://www.avatic.com/>  
*Web Developer, SEO Marketer*

Developed an open source web statistics software package with over 400,000 downloads and tens of thousands of active users (2000-2008). Created a web-based multiplayer video game that had over 80,000 registered users (2006-2007). Maintained an Apache/Linux web server running one of the top 20,000 (according to Alexa) most popular websites (2006-2007). Applied innovative search engine optimization (SEO) techniques both internally and for clients (2005-2008). Performed freelance web programming in Perl and PHP for several clients (2000-2007).

## TECHNICAL SKILLS

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Proficient in: MATLAB, Python, JavaScript, TypeScript, PHP, SQL, HTML5, CSS  
Familiar with: C#, C, R, Perl, GTK+,  $\LaTeX$   
Software: Linux, git