

Matthew D. Slein

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EDUCATION

Dartmouth College Molecular and Cellular Biology Graduate Program – August 2020 – Present

Boston College Morrissey College of Arts and Sciences – *Class of 2017*

Bachelor of Science in Biology with a Minor in Hispanic Studies

PUBLICATIONS

- Gunn BM, Lu R, **Slein MD**, Ilinykh PA, Huang K, Atyeo C, Schendel SL, Kim J, Cain C, Roy V, Suscovich TJ, Takada A, Halfmann PJ, Kawaoka Y, Pauthner MG, Momoh M, Goba A, Kanneh L, Andersen KG, Schieffelin JS, Grant D, Garry RF, Sapphire EO, Bukreyev A, Alter G. A Fc engineering approach to define functional humoral correlates of immunity against Ebola virus. *Immunity*. 2021 Apr 13;54(4):815-828.e5. doi: 10.1016/j.immuni.2021.03.009. PMID: 33852832; PMCID: PMC8111768.
- Bartsch YC, Fischinger S, Siddiqui SM, Chen Z, Yu J, Gebre M, Atyeo C, Gorman MJ, Zhu AL, Kang J, Burke JS, **Slein M**, Gluck MJ, Beger S, Hu Y, Rhee J, Petersen E, Mormann B, Aubin MS, Hasdianda MA, Jambaulikar G, Boyer EW, Sabeti PC, Barouch DH, Julg BD, Musk ER, Menon AS, Lauffenburger DA, Nilles EJ, Alter G. Discrete SARS-CoV-2 antibody titers track with functional humoral stability. *Nat Commun*. 2021 Feb 15;12(1):1018. doi: 10.1038/s41467-021-21336-8. PMID: 33589636; PMCID: PMC7884400.
- Atyeo C, Pullen KM, Bordt EA, Fischinger S, Burke J, Michell A, **Slein MD**, Loos C, Shook LL, Boatman AA, Yockey LJ, Pepin D, Meinsohn MC, Nguyen NMP, Chauvin M, Roberts D, Goldfarb IT, Matute JD, James KE, Yonker LM, Bebell LM, Kaimal AJ, Gray KJ, Lauffenburger D, Edlow AG, Alter G. Compromised SARS-CoV-2-specific placental antibody transfer. *Cell*. 2021 Feb 4;184(3):628-642.e10. doi: 10.1016/j.cell.2020.12.027. Epub 2020 Dec 23. PMID: 33476549; PMCID: PMC7755577.
- Atyeo C, **Slein MD**, Fischinger S, Burke J, Schäfer A, Leist SR, Kuzmina NA, Mire C, Honko A, Johnson R, Storm N, Bernett M, Tong P, Zuo T, Lin J, Zuiani A, Linde C, Suscovich T, Wesemann DR, Griffiths A, Desjarlais JR, Juelg BD, Goudsmit J, Bukreyev A, Baric R, Alter G. Dissecting strategies to tune the therapeutic potential of SARS-CoV-2-specific monoclonal antibody CR3022. *JCI Insight*. 2021 Jan 11;6(1):e143129. doi: 10.1172/jci.insight.143129. PMID: 33427208; PMCID: PMC7821590.
- Zohar T, Loos C, Fischinger S, Atyeo C, Wang C, **Slein MD**, Burke J, Yu J, Feldman J, Hauser BM, Caradonna T, Schmidt AG, Cai Y, Streeck H, Ryan ET, Barouch DH, Charles RC, Lauffenburger DA, Alter G. Compromised Humoral Functional Evolution Tracks with SARS-CoV-2 Mortality. *Cell*. 2020 Dec 10;183(6):1508-1519.e12. doi: 10.1016/j.cell.2020.10.052. Epub 2020 Nov 3. PMID: 33207184; PMCID: PMC7608014.

- Atyeo C, Fischinger S, Zohar T, **Slein MD**, Burke J, Loos C, McCulloch DJ, Newman KL, Wolf C, Yu J, Shuey K, Feldman J, Hauser BM, Caradonna T, Schmidt AG, Suscovich TJ, Linde C, Cai Y, Barouch D, Ryan ET, Charles RC, Lauffenburger D, Chu H, Alter G. Distinct Early Serological Signatures Track with SARS-CoV-2 Survival. *Immunity*. 2020 Sep 15;53(3):524-532.e4. doi: 10.1016/j.immuni.2020.07.020. Epub 2020 Jul 30. PMID: 32783920; PMCID: PMC7392190.
- Suscovich TJ, Fallon JK, Das J, Demas AR, Crain J, Linde CH, Michell A, Natarajan H, Arevalo C, Broge T, Linnekin T, Kulkarni V, Lu R, **Slein MD**, Luedemann C, Marquette M, March S, Weiner J, Gregory S, Coccia M, Flores-Garcia Y, Zavala F, Ackerman ME, Bergmann-Leitner E, Hendriks J, Sadoff J, Dutta S, Bhatia SN, Lauffenburger DA, Jongert E, Wille-Reece U, Alter G. Mapping functional humoral correlates of protection against malaria challenge following RTS,S/AS01 vaccination. *Sci Transl. Med*. 2020 Jul 22;12(553): eabb4757. doi: 10.1126/scitranslmed.abb4757. PMID: 32718991.
- **Slein MD**, Roy V, Atyeo C, Fischinger S, Loos C, et al. SARS-CoV-2-specific ELISA Development. *Journal of Immunological Methods*. 2020. Volumes 484-845 doi.org/10.1016/j.jim.2020.112832
- Loos C, Atyeo C, Fischinger S, Burke J, **Slein MD**, Streeck H, Lauffenburger D, Ryan ET, Charles RC, Alter G. Evolution of Early SARS-CoV-2 and Cross-Coronavirus Immunity. *mSphere*. 2020 Sep 2;5(5):e00622-20. doi: 10.1128/mSphere.00622-20. PMID: 32878931; PMCID: PMC7471005.
- Yu J, Tostanoski LH, Peter L, et al. DNA vaccine protection against SARS-CoV-2 in rhesus macaques. *Science*. 2020; abc6284. doi:10.1126/science.abc6284
- Chandrashekar A, Liu J, Martinot AJ, et al. SARS-CoV-2 infection protects against rechallenge in rhesus macaques. *Science*. 2020; abc4776. doi:10.1126/science.abc4776
- Karsten CB, Mehta N, Shin S, **Slein MD**, Broge T, Deifenbach T, Suscovich T, Alter G. A Versatile High Throughput Assay to Characterize Antibody-Mediated Neutrophil Phagocytosis. *Journal of Immunological Methods*. 2019. Volume 471 46-56. doi: 10.1016/j.jim.2019.05.006
- Han SY, Antoine A, Howard D, Chang B, Chang WS, **Slein M**, Deikus G, Kossida S, Duroux P, Lefranc M-P, Sebra RP, Smith ML and Fofana IBF (2018) Coupling of Single Molecule, Long Read Sequencing with IMGT/HighV-QUEST Analysis Expedites Identification of SIV gp140 Specific Antibodies from scFv Phage Display Libraries. *Front. Immunol*. 9:329. doi: 10.3389/fimmu.2018.00329

PRESENTATIONS

- **Poster Presentation: Matthew Slein**, Rationally Engineered Functionally Optimized Recombinant Monoclonal antibodies as a strategy to enhance therapeutic efficacy of antibodies against Ebola virus. Ragon Institute Annual Retreat, September 13-15, 2019.

RELEVANT WORK EXPERIENCE

Ragon Institute of MGH, MIT, and Harvard Cambridge, MA *Research Technician III – Alter Lab* June 2017- August 2020

- Development and qualification of an ELISA assay to understand the antibody response to SARS-CoV-2
- Utilization of systems serology to understand the immune response of individuals with COVID-19
- Development of a high throughput cloning schema to produce monoclonal antibodies with optimized effector functions against various pathogens
- Development and optimization of protein production and purification of antibodies in both large and small scale
- Utilization of systems serology and *in vitro* biochemical and functional assays to explore the role of Fc mutations in altering function
- Development of ELISA based assays to assess downstream functions of neutrophils
- ELISA based assays to understand titer and change in antibody response over time to Epstein-Barr Virus in a cohort of patient samples
- Understanding the role of antibodies in *Mycobacterium tuberculosis* infection

ADDITIONAL LAB EXPERIENCE

Advanced Molecular Biology Lab Course

Spring

2016

- Cloning anti-SIV monoclonal antibodies into a mammalian expression vector
- Used PCR to amplify and assemble antibody VH and VL fragments into scFV formats into a plasmid vector and then transformed into bacteria
- DNA maxi and mini-preparation
- Transfection of 293T Cells (Biosafety Level 2)
- Characterization via ELISA and immunoblotting

Undergraduate Research

September 2016 – May 2017

- Continued work with anti-SIV monoclonal antibodies
- Engineering of bispecific antibody to SIV
- Use of sequencing to understand genetic diversity of antibodies discovered from phage display libraries

ADDITIONAL WORK EXPERIENCE

Boston College Residential Life Chestnut Hill, MA *Resident Assistant*

August 2015 –

May 2017

- Work on a staff of 16 people in a community that houses 800.

- Participate in trainings preceding each semester, which exceed more than 120 hours per year.
- Communicate effectively with supervisor, fellow RAs, residents, custodial staff, and the Boston College Police Department.
- Balance academic requirements; maintain a safe and secure living community for residents and counsel residents

Boston College Dining Services Chestnut Hill MA, *Student Manager* September 2014 – May 2017

- Promoted to manager after one year of working.
- Manage a staff of 15 people in a café that serves more than 3000 customers per day.
- Work closely with permanent staff and other managers to ensure that all tasks are completed.
- Ensure that customers have a pleasant and delicious dining experience.

Computers and Software:

Microsoft Excel, PowerPoint, Word, GraphPad Prism, FlowJo, Geneious

Languages:

English

Spanish