Rick A. Bright, PhD

Biography

Dr. Rick Bright is an international expert on pandemic preparedness and response. In his most recent role as the Chief Executive Officer of the Pandemic Prevention Institute (PPI) at The Rockefeller Foundation, Dr. Bright led the development of the Foundation's pandemic data-to-action platform that integrates modern technology, data analytics and global partners to help the world detect, prevent, and mitigate pandemic threats to achieve containment as quickly as possible.

Prior to this role, he served as the Deputy Assistant Secretary for Preparedness and Response and the Director of the Biomedical Advanced Research and Development Authority (BARDA), in the U.S. Department of Health and Human Services. Dr. Bright has also gained extensive experience in the biotechnology industry where he served in senior leadership and executive management roles. He has held senior scientific leadership positions in non-governmental organizations where he championed innovative vaccine development and expanded vaccine manufacturing capacity to multiple developing countries. He also spent a decade in vaccine, therapeutics, and diagnostics development at the Centers for Disease Control and Prevention. For this work, Dr. Bright received the Charles C. Shepard Science Award for Scientific Excellence.

Dr. Bright serves as an international subject matter expert in biodefense, emergency preparedness and response, pharmaceutical innovation, vaccine, drug and diagnostic development and served as an advisor to the Biden Administration, World Health Organization, the Coalition for Epidemic Preparedness Innovations (CEPI) and the National Academies of Sciences, Engineering & Medicine Forum on Microbial Threats. Dr. Bright serves as an Executive Board Member for the NY Academy of Sciences International Science Reserve, is on the board of the Sepsis Alliance, a Sr. Fellow at the Foreign Policy Association, and a member of the Council on Foreign Relations.

Dr. Bright received a Ph.D. in Immunology and Molecular Pathogenesis from Emory University and a B.S. *magna cum laude* in Biology and Physical Sciences from Auburn University at Montgomery.

Rick A. Bright, PhD

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Interests

- **Pandemic and emergency preparedness and response**
- **Innovation:** Identifying and catalyzing transformative technology and approaches to improve awareness, detection, empowerment, response, production, supply chain management, delivery, and equitable access and administration of lifesaving medicines to improve human health
- **Policy**: Global health, pandemic preparation & response
- **Vaccines**: Discovery, development, supply chain, distribution, administration
- **Therapeutic intervention**: Discovery, development, genomic surveillance
- **Surveillance:** Global laboratory strengthening, genomic and environmental, data sharing
- **Rapid point-of-care and point-of-need diagnostics, wearable technologies**

Professional Experience

3/2021 – 10/2022 **The Rockefeller Foundation,** ***Washington, DC***
CEO, The Pandemic Prevention Institute
Senior Vice President, Pandemic Prevention and Response

- Advised Foundation President on global pandemic preparedness and response
- Established and launched the pandemic prevention institute for global surveillance
- Catalyzed transformative data technologies to prioritize high risk pathogens to inform pandemic preparedness
- Partnered with global health organizations to ensure signals of outbreaks triggers medical countermeasure development
- Partnered with global health experts to shape the global pandemic preparedness ecosystem and the political will to sustain the ecosystem
- Raised $150 M to incubate the institute through maturation for eventual spin out

11/2020 – 2/2021 **Biden-Harris Administration COVID-19 Advisory Board,** ***Washington, DC***

- Provided guidance on pandemic response, including testing, vaccines, therapeutics and supply chain to establish priorities and policies during administration transition

10/2010 – 10/2020 **US Dept. Health and Human Services,** ***Washington, DC***
Senior Advisor to NIH Director (05/2020 – 10/2020)

Office of the Assistant Secretary for Preparedness and Response
Biomedical Advanced Research and Development Authority (BARDA)
Director, BARDA (11/2016 – 05/2020)
Deputy Assistant Secretary for Preparedness & Response (11/2016 – 05/2020)
Incident Commander, ASPR/BARDA Zika Response (02/2016 – 01/2018)
Director, Influenza and Emerging Diseases Division (12/2014 – 11/2016)
Acting Director, Influenza and Emerging Diseases Division (11/2013 – 12/2014)
Deputy Director, Influenza and Emerging Diseases Division (06/2011 –12/2015)
Chief, Influenza Antiviral Drug Advanced Development (02/2011 – 10/2012)
Program Lead, International Capacity Building Programs (10/2010 – 03/2014)

- Responsible for leading the only US Government organization with a mission to partner with private industry to invest in and support innovation, research, development and procurement of medical countermeasures against an array of threats to national security and the public's health, including chemical, biological, radiological, nuclear threats and pandemic influenza, and emerging diseases
- Through public/private partnerships, achieved 55 FDA approvals for medical countermeasures against a diverse range of pathogens and national security priorities
- Established RADx-ATP to accelerate rapid development, scale and surge of laboratory and point of care diagnostic technologies and capacity for the COVID-19 pandemic
- Developed and lead an interagency strategy for response to the COVID-19 pandemic for rapid development of vaccines, therapeutics, and diagnostics
- Developed and launched DRIVe, Division of Research, Innovation and Ventures, to scout, invest in and catalyze development of new technologies to transform healthcare to improve access, availability, and efficiency of lifesaving medicines
- Launched CARB-X, the world's largest public-private partnership to stimulate the early-stage pipeline of novel antibiotics to address antimicrobial resistance
- Established the first US government-lead venture capital fund to combine public-private equity investment to accelerate transformative healthcare innovation
- Led the BARDA international program in 12 developing countries to support expansion and licensure of vaccine production capacity. Pandemic vaccine capacity in these countries expanded from 1 million to over 1 billion doses from this program
- Led and coordinated US and global medical countermeasure development for the 2014 MERS outbreak and the 2016 Zika Response (Incident Commander)
- Secured over $6 billion USD in supplemental funding for BARDA to support COVID-19 medical countermeasure development
- Led and managed technical and administrative teams responsible for management oversight and execution of an active portfolio exceeding $72 billion USD
- Managed an average annual budget of $2 billion USD
- Formed and actively managed partnerships with over 400 global industry partners: micro-organizations to biotech to multi-national pharmaceutical organizations
- Represented BARDA, ASPR, HHS and the USG in domestic and international conferences and meetings on policy and technical topics
- Member of the WHO R&D Blueprint Science Advisory Group to develop strategies to coordinate international response plans for emerging infectious diseases
- Served as USG representative with foreign government officials to coordinate and develop strategies on policy and health technologies
- Represented ASPR/BARDA in briefings/testimony to congress and the White House

02/2008 – 10/2010 **PATH - Global Vaccine Development Program,** ***Washington, DC***
Director, Vaccine Manufacturing Capacity Building in Viet Nam
Scientific Director, Influenza Vaccine Project

- Developed, championed and managed scientific strategies of the global influenza vaccine program, funded by the Bill and Melinda Gates Foundation
- Managed $40 million portfolio to scout, invest and accelerate the development of innovative influenza vaccine technologies

- Conducted analyses of innovative vaccine technologies that could be available, affordable and accessible to people in developing countries
- Established and directed program to enhance technical and clinical capacity to produce, evaluate and introduce pandemic influenza vaccines in Viet Nam. Received $7.9 million from BARDA to support the program
- Established and managed technical scientific teams in the United States and Vietnam
- To respond to the 2009 H1N1 influenza pandemic, was seconded to the World Health Organization to serve on the H1N1 Vaccine Task Force
- Served on the DoD DARPA Scientific Advisory Board for Accelerated Manufacturing Program and for the Blue Angel Program for development of vaccines
- Collaborated with domestic and international vaccine development partners to advance vaccines from early development through clinical evaluation
- Raised over $16 million in the form of grants and contracts to support and diversify vaccine development programs

2006 – 2008 **Novavax, Inc.,** ***Rockville, MD***
*A clinical stage vaccine compan*y
Vice President, Global Influenza Programs
Vice President, Vaccine Research
Vice President, Vaccine Development

- Executive Team Sponsor for two vaccine candidates, directing development progression from early discovery through late-stage clinical development
- Chaired the Product Development Strategy Team for influenza vaccines
- Integrated all functional areas of the vaccine discovery, research and development process, business development, and education/advocacy to develop the vision and strategy of a novel vaccine production platform
- Recruited and supervised a successful scientific and senior management team
- Served as an ambassador for the company to introduce and champion a unique technology and pipeline to global audiences including scientific, political, financial and international government / non-government organizations
- Established and maintained partnerships in Hong Kong, China, India and Taiwan
- Participated on WHO committees: vaccine development and pandemic preparedness

2003 – 2006 **Centers for Disease Control and Prevention, Influenza Division, Strain Surveillance Branch,** ***Atlanta, GA***
ORISE Research Fellow - Immunologist/Virologist

- Led project team for the influenza antiviral drug program and drug resistance surveillance team
- Represented the CDC Influenza Division on matters of avian influenza, vaccine development and antiviral drug resistance at global congresses
- Accountable for the surveillance of influenza isolates for resistance to influenza antiviral drugs, including H5N1 viruses in BSL3+ high containment laboratories
- Recipient of 3-year grant from Antimicrobial Resistance Working Group
- Supervised a research team of MS- and PhD-level scientists. Trained over 15 international visiting scientists. Mentored 4 graduate and undergraduate students
- Recipient of Charles C. Shepard award for scientific excellence

2002 – 2003 **Altea Therapeutics - Vaccine and Immunology Programs, *Atlanta, GA***
A Clinical stage biopharmaceutical company
Senior Research Scientist & Project Leader

- Created a new vaccine delivery program to show feasibility of transdermal delivery of vaccines, using a novel thermal-based microneedle delivery system
- Managed a team of 18 scientists across 4 research sites in the U.S. and Canada

1998 – 2002 **Centers for Disease Control and Prevention, Influenza Branch, Immunology and Viral Pathogenesis Section, *Atlanta, GA***

- Developed and characterized novel influenza vaccine candidates for seasonal and pandemic influenza in a BSL3+ high containment facility
- Analyzed in vivo and in vitro mechanisms and molecular correlates of pathogenicity of influenza A(H5N1) viruses

Boards/Committees

- Sepsis Innovation Collaborative – Member 2022- present
- Council on Foreign Relations – Member 2022 – present
- International Science Reserve – Executive Board 2021-present
- Foreign Policy Association – Senior Fellow 2021-present
- New York Academy of Science – Member 2019 – present
- WHO R&D Blueprint for Action to Prevent Epidemics – Scientific Advisory Group 2017 – 2020
- National Academies of Sciences, Engineering & Medicine Forum on Microbial Threats 2018-2020
- National Academies of Sciences, Engineering & Medicine Forum on Drug Discovery 2019-2020
- CEPI – Coalition for Epidemic Preparedness Innovations – Scientific Launch Cmte 2015-2017
- International Society of Influenza and other Respiratory Viruses – Board – 2015
- Global Health Security Initiative – Pandemic Influenza Working Group 2016-2020
- ACIP Novel Influenza Vaccines Working Group (ex-officio) 2016-2020
- WHO Global Action Plan for Influenza Vaccines 2011-2018

Awards

- Omicron Delta Kappa 2022 Pillar of Leadership Award
- Distinguished Kansan, 2020
- Ridenhour Award for Truth-telling, 2020
- Hutchinson High School Wall of Honor Recipient, 2017
- Top 40 Graduates in 40 years of history – Auburn University-Montgomery, 2010
- Charles C. Shepard Science Award for Scientific Excellence, 2007
- Nakano Citation for the best scientific publication at CDC, 2006, 2007
- National Center for Infectious Diseases Honor Award for Public Health Epidemiology and Laboratory Research, 2005
- Who's Who Among Students in American Universities, 1996, 1997
- The Honor Society of Phi Kappa Phi, Inducted 1997
- Omicron Delta Kappa - Leader of the Year, 1997
- Alabama Academy of Science Top Research Award, 1997
- Omicron Delta Kappa, National Leadership Honor Society, Inducted 1995
- Alpha Epsilon Delta Honor Society, Inducted 1994

Education

ADVAC Advanced Course in Vaccinology, Annecy, France **2010**
(Fondation Merieux and University of Geneva)

Emory University, *Atlanta, Georgia*
Degree: Ph.D., 2002
Immunology and Molecular / Viral Pathogenesis (Virology)
Division of Biological and Biomedical Sciences, School of Medicine
PhD Dissertation: Studies on Pathogenicity & Control of Influenza A (H5N1) Virus

Auburn University, *Montgomery, Alabama*
Degree: Double Major B.S., magna cum laude, 1997
Majors: Biology GPA: 4.00/4.00; Physical Science (Chemistry) GPA: 3.96/4.00

Publications

1. Anupindi, R, Yadav, P, Jefferson, K, and Ashby, E, Editors; Committee on Addressing Issues of Vaccine Distribution and Supply Chains to Advance Pandemic and Seasonal Influenza Preparedness and Response (Bright); National Academy of Medicine 2022. Globally Resilient Supply Chains for Seasonal and Pandemic Influenza Vaccines. Washington, DC: The National Academies Press. https://doi.org/10.17226/26285.
2. Buchman T, Simpson S, Sciarretta K, Finne K, Sowers N, Collier M, Chavan M, Do R, Lin C, Oke I, Rhodes K, Santhosh A, Sandhu A, Chu S, Patel S, Disbrow G, **Bright RA**, MaCurdy T, Kelman J (2021). Seasonal influenza vaccination is associated with reduced risk of death among Medicare beneficiaries. National Academy of Medicine, December 20, 2021. doi: 10.1016/j.vaccine.2021.11.016.
3. Brilliant L, Danzig L, Oppenheimer K, Mondal A., **Bright RA**, Lipkin WI (2021). The Forever Virus: A Strategy for the Long Fight Against COVID19. Foreign Affairs 100(76), June 8, 2021. https://www.foreignaffairs.com/articles/united-states/2021-06-08/coronavirus-strategy-forever-virus
4. Oshansky CM, King J, Lu D, Zhou J, Pavetto C, Horwith G, Biscardi K, Nguyen B, Treanor JJ, Chen LM, Jepson B; BPI17002 Study Coordination Team, **Bright RA**, Johnson RA, Cioce V, Donis RO (2021). Adjuvanted recombinant hemagglutinin H7 vaccine to highly pathogenic influenza A(H7N9) elicits high and sustained antibody responses in healthy adults. NPJ Vaccines. 2021 Mar 19;6(1):41. doi: 10.1038/s41541-021-00287-7. PMID: 33741987; PMCID: PMC7979905.
5. Tromberg BJ, Schwetz TA, Perez-Stable EJ, Hodes RJ, Woychik RP, **Bright RA**, Fleurence RL, Collins FS (2020). Rapid Scaling Up of Covid-19 Diagnostic Testing in the United States – The NIH RADx Initiative. New England Journal of Medicine. Jul 22. DOI: 10.1056/NEJMsr2022263
6. Buchman TG, Simpson SQ, Sciarretta KL, Finne KP, Sowers N, Collier M, Chavan S, Oke I, Pennini ME, Santhosh A, Wax M, Woodbury R, Chu S, Merkeley TG, Disbrow GL, **Bright RA**, MaCurdy TE, Kelman JA (2020). Sepsis Among Medicare Beneficiaries: 1. The Burdens of Sepsis, 2012-2018. Critical Care Medicine. 2020 Mar;48(3):276-288.
7. Buchman TG, Simpson SQ, Sciarretta KL, Finne KP, Sowers N, Collier M, Chavan S, Oke I, Pennini ME, Santhosh A, Wax M, Woodbury R, Chu S, Merkeley TG, Disbrow GL, **Bright RA**, MaCurdy TE, Kelman JA (2020). Sepsis Among Medicare Beneficiaries: 2. The Trajectories of Sepsis, 2012-2018. Critical Care Medicine. 2020 Mar;48(3):289-301.

8. Buchman TG, Simpson SQ, Sciarretta KL, Finne KP, Sowers N, Collier M, Chavan S, Oke I, Pennini ME, Santhosh A, Wax M, Woodbury R, Chu S, Merkeley TG, Disbrow GL, **Bright RA**, MaCurdy TE, Kelman JA (2020). Sepsis Among Medicare Beneficiaries: 3. The Methods, Models and Forecasts of Sepsis, 2012-2018. Critical Care Medicine. 2020 Mar;48(3):302-318.
9. King JC, Beigel JH, Ison MG, Rothman RE, Uyeki TM, Walker RE, Neaton JD, Tegeris JS, Zhou JA, Armstrong KL, Carter W, Miele PS, Willis MS, Dugas AF, Tracy LA, Vock DM, **Bright RA** (2019). Clinical Development of Therapeutic Agents for Hospitalized Patients with Influenza: Challenges and Innovations. Open Forum Infectious Diseases. Mar 14;6(4):ofz137.
10. Oshansky CM, Zhou J, Gao Y, Schweinle JE, Biscardi K, DeBeauchamp J, Pavetto C, Wollish A, BRITE Study Coordination Team, Webby RJ, Cioce V, Donis RO, **Bright RA** (2019). Safety and immunogenicity of influenza A(H5N1) vaccine stored up to twelve years in the National Pre-Pandemic Influenza Vaccine Stockpile (NPIVS). Vaccine. Jan 14;37(3):435-443.
11. Arabi Y, Fowler R, **Bright RA**, Kerkhove M (2016). Knowledge gaps in therapeutic and non-therapeutic research on the Middle East respiratory syndrome. The Lancet Respiratory Medicine Jan;4(2):93-94.
12. Gessner BD, Brooks WA, Neuzil KM, Vernet G, **Bright RA**, Tam JS, Bresee J, Monto AS (2013). Vaccines as a tool to estimate the burden of severe influenza in children of low-resourced areas. Vaccine. Jul 11;31(32):3222-8.
13. Wathen MW, Barro M, **Bright RA** (2013). Antivirals in seasonal and pandemic influenza – future perspectives. Influenza Other Respir Viruses. Jan;7 Suppl 1:76-80.
14. Neuzil KM, **Bright RA**, Nyari LJ, Boslego JW (2012). PATH Influenza Vaccine Project: Accelerating the development of new influenza vaccines for low-resource countries. Expert Review for Vaccines. Aug;11(8):939-47.
15. Perdue M, **Bright RA** (2011). United States of America Department of Health and Human Services support for advancing influenza vaccine manufacturing in the developing world. Vaccine 29(Suppl 1):A48-A50.
16. Mochalova L, **Bright RA**, Xu X, Korchagina E, Chinarev A, Bovin N, Klimov A (2010). Shift in oligosaccharide specificities of hemagglutinin and neuraminidase of influenza B viruses resistant to neuraminidase inhibitors. Glycoconj J. Apr;27(3):321-7.
17. **Bright RA**, Neuzil KM, Pervikov Y, Palkonyay L (2009). WHO meeting on the role of neuraminidase in inducing protective immunity against influenza infection. Vaccine 27(45):6366-9.
18. Neuzil KM, **Bright RA** (2009). Influenza vaccine manufacture: Keeping up with change. The Journal of Infectious Diseases 200:835–837.
19. TM Ross, Mahmood K, Crevar CJ, Schneider-Ohrum K, Heaton PM, **Bright RA** (2009). A trivalent virus-like particle vaccine elicits protective immune responses against seasonal influenza strains in mice and ferrets. PLoS One 4(6):e6032.
20. VM Deyde, Nguyen T, **Bright RA**, Balish A, Shu B, Lindstrom S, Klimov AI, Gubareva LV (2009). Detection of molecular markers of antiviral resistance in influenza A (H5N1) viruses using a pyrosequencing method. Antimicrob Agents Chemother 53(3):1039-47.
21. TR Maines, Szretter KJ, Perrone L, Belser JA, **Bright RA**, Zeng H, Tumpey TM, Katz JM (2008). Pathogenesis of emerging avian influenza viruses in mammals and the host innate immune response. Immunol Rev. 225:68-84.
22. Mahmood K, **Bright RA**, Mytle N, Carter DM, Crevar CJ, Achenbach JE, Heaton PM, Tumpey TM, Ross TM (2008). H5N1 VLP vaccine induced protection in ferrets against lethal challenge with highly pathogenic H5N1 influenza viruses. Vaccine 26(42):5393-9.

23. Sheu TG, Deyde VM, Okomo-Adhiambo M, Garten RJ, Xu X, **Bright RA**, Butler EN, Wallis TR, Klimov AI, Gubareva LV (2008). Surveillance for neuraminidase inhibitor resistance among human influenza A and B viruses circulating worldwide from 2004 to 2008. Antimicrob Agents Chemother 52(9):3284-92.
24. Maines R, Szretter KJ, Perrone L, Belser JA, **Bright RA**, Zeng H, Tumpey TM, Katz JM (2008). Pathogenesis of emerging avian influenza viruses in mammals and the host innate immune response. Immunol Rev. 225:68-84.
25. Rahman M, **Bright RA**, Kieke BA, Donahue JG, Greenlee RT, Vandermause M, Balish A, Foust A, Cox NJ, Klimov AI, Shay DK, Belongia EA (2008). Adamantane-resistant influenza infection during the 2004–05 season. Emerg Infect Dis 14(1):173-76.
26. **Bright RA**, Carter DM, Crevar CJ, Toapanta FR, Steckbeck JD, Cole KS, Kumar NM, Pushko P, Smith G, Tumpey TM, Ross TM (2008). Cross-clade protective immune responses to influenza viruses with H5N1 HA and NA elicited by an influenza virus-like particle. PLoS ONE 3(1): e1501. doi:10.1371/journal.pone.0001501.
27. **Bright RA**, Carter DM, Daniluk S, Toapanta FR, Ahmad A, Gavrilov V, Massare M, Pushko P, Mytle N, Rowe T, Smith G, Ross TM (2007) Influenza virus-like particles elicit broader immune responses than whole virion inactivated influenza virus or recombinant hemagglutinin. Vaccine 25(19):3871-8.
28. Pushko P, Tumpey TM, Van Hoeven N, Belser JA, Robinson R, Nathan M, Smith G, Wright DC, **Bright RA** (2007). Evaluation of influenza virus-like particles and Novasome adjuvant as candidate vaccine for avian influenza. Vaccine 25(21):4283-90.
29. Chen H, **Bright RA,** Subbarao K, Smith C, Cox NJ, Katz JM, Matsuoka Y (2007). Polygenic virulence factors involved in pathogenesis of 1997 Hong Kong H5N1 influenza viruses in mice. Virus Res. 128(1-2):159-63.
30. Deyde VM, Xu X, **Bright RA,** Shaw M, Smith CB, Zhang Y, Shu Y, Gubareva LV, Cox NJ, Klimov AI (2007). Surveillance of resistance to adamantanes among influenza A(H3N2) and A(H1N1) viruses isolated worldwide. J Infectious Diseases 196(2):249-57.
31. Klimov A, Balish A, Foust A, Kieke B, Belongia E, Vandermause M, **Bright RA** (2006). Clinical characteristics of Adamantane resistant influenza in Wisconsin during the 2004-05 season. Conference paper, Infectious Diseases Society of America 2006 Annual Meeting.
32. **Bright RA,** Shay D, Bresee J, Klimov A, Cox N, Ortiz J (2006). High levels of adamantane resistance among influenza A(H3N2) viruses and interim guidelines for use of antiviral agents United States, 2005-06 influenza season. Morbidity and Mortality Weekly Report, Jan. 2006.
33. **Bright RA**, Shay DK, Shu B, Cox NJ, Klimov AI (2006). Adamantane resistance among influenza A viruses isolated early during the 2005-2006 influenza season in the United States. JAMA 295(8):891-4.
34. **Bright RA,** Medina M, Xu X, Perez-Oronoz G, Wallis T, Davis XM, L Povinelli, Cox NJ, and Klimov AI (2005). Increasing incidence of adamantane resistance among influenza A(H3N2) viruses, isolated globally from 1994 to 2005: A cause for concern. The Lancet 366:1175-81.
35. Hoelscher M, Garg S, Bangari D, Belser J, X Lu, Stephenson I, **Bright RA,** Katz J, Mittal S, Sambhara S (2005). An adenoviral vector-based pandemic influenza vaccine confers protection against antigenically distinct human H5N1 strains. The Lancet 367:475-81.
36. Bhat N, Wright JG, and Members of the Influenza Special Investigations Team **(RA Bright)** (2005). Deaths in children associated with influenza, United States, 2003-04. New England Journal of Medicine 353(24):2559-2567.

37. Crawford PC, Dubovi EJ, Castleman WL, Stephenson I, Gibbs EPJ, Chen L, Smith C, Hill RC, Ferro P, **Bright RA,** Medina M, Johnson CM, Olsen CW, Cox NJ, Klimov AI, Katz JM, and Donis RO (2005). Interspecies transmission of equine influenza virus to dogs. Science 310(5747):482-5.
38. Donis RO and Members of the World Health Organization's Global Influenza Program and Collaborating Laboratories **(Bright RA)** (2005). Avian influenza virus H5N1 evolution. Emerging Infectious Diseases 11(10): 1515-21.
39. **Bright RA,** Ross TM, Subbarao K, Katz JM, and Robinson HL (2003). Impact of glycosylation on the immunogenicity of a DNA-based influenza H5 hemagglutinin vaccine. Virology 308(2): 270-278.
40. **Bright RA,** Cho DS, Rowe T, and Katz JM (2003). Mechanisms of pathogenicity of influenza A (H5N1) viruses in mice. Avian Diseases 47:1131-4.
41. Mitchell JA, Green TD, **Bright RA,** and Ross TM (2003). Induction of heterosubtypic immunity to influenza A virus using a DNA vaccine expressing hemagglutinin-C3d fusion proteins. Vaccine 21: 902-914.
42. Rowe T, Cho DS, **Bright RA,** Zitzow LA, and Katz JM (2003). Neurological manifestations of avian influenza viruses in mammals. Avian Diseases 47:1122-6.
43. Ross TM, Xu Y, **Bright RA,** and Robinson HL (2000). C3d enhancement of antibodies to hemagglutinin accelerates protection against influenza virus challenge. Nature Immun 1(2): 127.

Recent Editorials

1. Emanuel EJ, Michaels D, **Bright RA**, Osterholm M (2022). **We Advised Biden on the Pandemic. Much Work Remains to Face the Next Crisis.** The New York Times, October 19, 2022. https://www.nytimes.com/2022/10/19/opinion/covid-pandemic-failures.html
2. **Bright RA** (2022). The Clues to the Next Variant Surge Are All Around Us. The New York Times, February 2, 2022. https://www.nytimes.com/2022/02/02/opinion/covid-variant-air-sewage.html
3. Emanuel EJ, **Bright RA** (2022). COVID-19 is here to stay. Let's act accordingly. The Philadelphia Inquirer, January 27, 2022. https://www.inquirer.com/opinion/commentary/covid-emergency-new-normal-schools-endemic-20220127.html
4. Emanuel EJ, Michaels D, **Bright RA**, L Borio (2022). PCR covid tests are not very useful. Focus on rapid antigen tests instead. The Washington Post, January 26, 2022. https://www.washingtonpost.com/opinions/2022/01/26/use-rapid-antigen-tests-instead-of-pcr
5. Gounder C, **Bright RA**, Emanuel EJ (2022). To get to a 'new normal,' public health must focus on all respiratory viruses. STAT, January 20, 2022. https://www.statnews.com/2022/01/20/new-normal-public-health-must-focus-on-all-respiratory-viruses
6. Emanuel EJ, **Bright RA**, Osterholm M, Borio L (2022). The truth about COVID vaccines: Not perfect, but they're saving many lives. USA Today, January 18, 2022. https://www.usatoday.com/story/opinion/2022/01/18/covid-vaccines-arent-perfect-but-theyre-saving-lives/6526370001
7. Borio L, **Bright RA**, Emanuel EJ (2022). A National Strategy for COVID-19 Medical Countermeasures – Vaccines and Therapeutics. JAMA, January 18, 2022. doi: 10.1001/jama.2021.24165
8. Michaels D, Emanuel EJ, **Bright RA** (2022). A National Strategy for COVID-19 – Testing, Surveillance, and Mitigation Strategies. JAMA, January 18, 2022. doi: 10.1001/jama.2021.24168
9. Emanuel EJ, Osterholm M, Gounder C (2022). A National Strategy for the "New Normal" of Life With COVID. JAMA, January 18, 2022. doi: 10.1001/jama.2021.24282

10. **Bright RA** (2022). How We Can Spot the Next COVID-19 Variant Even Faster. Time, January 13, 2022. https://time.com/6139064/next-covid-19-variant-even-faster
11. Emanuel EJ, **Bright RA**, Gounder, C (2021). A Dismal Spring Awaits Unless We Slow the Spread of Covid-19. The New York Times, February 17, 2021. https://www.nytimes.com/2021/02/17/opinion/covid-19-precautions.html
12. Emanuel EJ, **Bright RA**, Gounder C, Borio L, Osterholm M, Gawande A (2021). Vaccines alone won't solve the pandemic. Here are 3 other things we must do. The Washington Post, February 5, 2021. https://www.washingtonpost.com/opinions/2021/02/05/vaccines-alone-wont-solve-pandemic-here-are-3-other-things-we-must-do
13. **Bright RA** (2020). I couldn't sit idly and watch people die from Trump's chaotic, politicized pandemic response, so I resigned. The Washington Post, October 7, 2020. https://www.washingtonpost.com/opinions/rick-bright-trump-coronavirus-response-nih/2020/10/07/3ed36cb4-08c3-11eb-859b-f9c27abe638d_story.html
14. **Bright RA** (2019). Building New Models to Support the Ailing Antibiotics Market. Forbes. May 10, 2019. https://www.forbes.com/sites/thelabbench/2019/05/10/building-new-models-to-support-the-ailing-antibiotics-market/#5127573a2909.

Book Chapters

1. Sang-Moo, Pushko P, **Bright RA**, Smith G, Compans RW (2009). Virus-like Particles for Pandemic Influenza Vaccines. Current Topics in Microbiology & Immunology, (Compans RW, Orenstein W)
2. Pushko PM, **Bright RA**, Tumpey TM, Smith G (2008). Engineering Better Influenza Vaccines: Traditional and New Approaches. Medicinal Protein Engineering, (Edtr Khudyakov YE)

Patents

1. Harriet L. Robinson, *et al.* DNA Expression Vectors and Methods of Use (US 7795017; 08506967)
2. Gale Smith, *et al*. Novel M2 Vaccines for Influenza (EPO 1998814-A2, US Application pending)
3. Gale Smith, et al. Functional Influenza Virus Like Particles (VLPs) (US 08080255)
4. Various applications on the development and use of virus-like particles as vaccines

Recent Blogs

1. Gounder C, **Bright RA** (2022). To Get to a 'New Normal,' Public Health Must Focus on All Respiratory Viruses. The Rockefeller Foundation, Pandemic Prevention Institute (PPI). January 31, 2022. https://www.rockefellerfoundation.org/blog/to-get-to-a-new-normal-public-health-must-focus-on-all-respiratory-viruses/
2. **Bright RA** (2022). How We Can Spot the Next Covid-19 Variant Even Faster (2022). The Rockefeller Foundation, Pandemic Prevention Institute (PPI). January 28, 2022. https://www.rockefellerfoundation.org/blog/how-we-can-spot-the-next-covid-19-variant-even-faster
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Presentations

More than 2,000 presentations and invited lectures at national and international conferences, workshops, symposiums, panels and television appearances on medical innovation, antimicrobial resistance, emerging infectious diseases, human and avian influenza virus evolution, pathogenesis, diagnostics, vaccine development, vaccine technologies, antiviral drug susceptibility, vaccine manufacturing and global supply chains, distribution of vaccines, policy, preparedness and response for pandemic influenza and other emerging diseases. Extensive on-camera media experience.