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Narrative Biosketch • 18 November 2024 • 2 Pages

• Dr. Kost studied Engineering at Stanford University and in Venezuela, then received the Master's degree in Engineering-Economic Systems (EEP) from Stanford prior to entering the Medical Scientist MD-PhD program at the University of California. He received his PhD in Bioengineering (NIH Traineeship) from UC San Diego and his MD from UC San Francisco in a Medical Scientist program. He was elected to Mu Alpha Theta (mathematics), Phi Kappa Phi (scholarship), and Sigma Xi (science) honor societies.

• His clinical residency comprised Internal Medicine/Neurology at UCLA and Laboratory Medicine at the University of Washington, Seattle. He is boarded in Clinical Pathology (ABP), was elected to the National Academy of Clinical Biochemistry (NACB, AACC Academy), served on its Board of Directors, and is licensed to practice medicine in California. For over three decades, he was Director of POCT and Clinical Chemistry for UC Davis Health. In 1995, he founded the POCT•CTR, and in 2016, the POC Institute. He has received two Edward A. Dickson Endowed Emeritus Professor Awards in the School of Medicine at UC Davis.

• A Founding Father of the medical field, *point-of-care testing (POCT),* he has invented numerous signature concepts, including *therapeutic turnaround time, the hybrid laboratory, the spatial care path,* and *point-of-care culture*. He is the co-inventor of *Point-of-Careology* in China. POCT is diagnostic testing at or near the site of care. By helping to implement POCT worldwide, he has moved rapid diagnostics and evidence-based treatment directly to points of need in the home, primary care, ambulances (sea, land, and air), emergency rooms, critical care units, and hospitals. Now ubiquitous for COVID-19 testing, POCT is helping to stop infectious outbreaks and facilitate preparedness, thereby improving medical and economic outcomes. Strategic POCT has proven pivotal to improving outcomes during the pandemic.

• Dr. Kost's seminal books codified the fundamental principles for this new field—*Handbook of Clinical Automation, Robotics, and Optimization* (Wiley); *Principles and Practice of Point-of-Care Testing* (Lippincott Williams & Wilkins); and *Global Point of Care: Strategies for Disasters, Emergencies, and Public Health Resilience* (AACC Press-Elsevier). He contributed extensively to books on POCT in China, the latest, a book titled "Point-of-Careology," which proposes this new medical specialty. He was a founding editorial board member of the journal, *Point of Care,* and serves on several other editorial boards. His recent chapters in *A Practical Guide to Global Point-of-Care Testing* (CSIRO, Australia) address the rapid detection of Ebola virus disease and other highly infectious threats and disaster resilience. He has received over 200 honors, awards, grants, speaking invitations, keynotes, and leadership positions worldwide and has been highlighted in approximately 20 Who's Who editions. He is the recipient of the Marquis Who's Who Worldwide Lifetime Achievement Award. His career total of published creative works is nearing 900.

• While a Fulbright Scholar in Demography, Medicine, and Economics at Chulalongkorn University in Thailand in 2003-04, he helped implement POCT throughout the ASEAN member states, as well as India, Japan, South Korea, and China. His work implementing POC cardiac biomarker testing in Thailand revolutionized the care of acute coronary syndromes in that country. He has designed a complete curriculum for teaching the principles and practice of POCT (see https://www.frontiersin.org/articles/10.3389/ fpubh.2018.00385/full).

• He was Principal Investigator/Director of the UC Davis POC Technologies Center (2007-2014) funded by the NIBIB at NIH. In 2015 and 2016, he received Outstanding Speaker Awards from the American Association for Clinical Chemistry, and in 2016, the AACC (NorCal) Award for *Outstanding Contributions to Clinical Chemistry through Science and Technology* recognizing "outstanding work in POCT, including recent work with Ebola testing and disaster readiness." He contributes to NIH, National Academy of Sciences, and U.S. GAO expert panels. He is advancing the new field of geospatial POCT. Please see his seminal paper in *Frontiers in Public Health* (https://doi.org/10.3389/fpubh.2019.00329).

• His global outreach has encompassed Affiliate Faculty, College of Population Studies, and currently, Visiting Professor, College of Public Health Sciences, at Chulalongkorn University, and Visiting Professor/Adjunct Staff at Siriraj Hospital, Mahidol University, in Bangkok. He is Visiting Professor at Naresuan University in central Thailand. He was invited keynoter in Riyadh, Saudi Arabia, and invited speaker for two national educational tours (Ho Chi Minh City, Hue, Hanoi) in Vietnam. He organized an International Symposium at Hue University, central Vietnam. He gave talks in Munich, Germany, and several contributions during WorldLab 2017, South Africa, as an inaugural member of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) POCT Task Force. During the pandemic, he delivered numerous virtual presentations worldwide, including keynote and resource lectures for a second IFCC Visiting Professorship at the annual convention of the Philippine Council for Quality Assurance in Clinical Laboratories in 2021. He is President and CEO of Knowledge Optimization® in Davis, California.

• He received his second Fulbright Scholar Award in 2020-2022 to study geospatial POCT in ASEAN with emphasis on improving standards of care in limited-resource and island nations. He was sponsored by the National Public Health Laboratory of the National Institute of Public Health and Puthisastra University in Phnom Penh, Cambodia in 2021. His research focused on geospatial mitigation of COVID-19 in rural provinces during peak outbreaks there. In 2022, he was resident at Cebu Technological University, Cebu City, the Philippines, and performed field research in the remote Bantayan Archipelago of the Visayas Islands. Research themes comprised a) COVID-19 POC strategies, b) cardiac biomarkers for emergency diagnosis of patients with acute myocardial infarction, c)

geospatial optimization of rapid response POCT in the healthcare small-world networks of mainland Cebu Island and Bantayan Archipelago, and d) POCT and prehospital testing for island populations faced with rising oceans, super typhoons, and weather disasters from global warming. Please see his paper in the International *Journal of Health Geographics* (https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-023-00359-y), the first paper to address the role of POCT in global warming.

• He published numerous papers on POC strategies for COVID-19 since the first case outside China arrived in northern Thailand, where he was conducting research. The papers are available free open access at the *Archives of Pathology and Laboratory Medicine* (https://meridian.allenpress.com/aplm), *Omni Digital Health* (https://insights.omniahealth.com/laboratory/covid-19-risk-avoidance-and-management-limited-resource-countries), *Diagnostics* (https://www.mdpi.com/journal/diagnostics), and *Public Health and Surveillance* (https://publichealth.jmir.org/2024/1/e47416). These works present original Bayesian mathematical equations he derived to reveal the impact of prevalence on COVID-19 tests. They use "predictive value geometric mean-squared" curves to illustrate how prevalence affects COVID-19 test results and introduce the "prevalence boundary hypothesis," which explains how false negative rapid antigen tests have contributed to perpetuation of the pandemic.

• Worldwide, Dr. Kost is ranked #1 in point-of-care testing by ScholarGPS (https://scholargps.com) and ranked in the top 0.05% in laboratory medicine (please see https://scholargps.com/highly-ranked-scholars?year=2022&ranking_duration=LIFETIME&e_ref=f62cfae81a38a92ca549&specialty=Point-of-care+testing&p=1).

• He is recipient of the 2023-24 Dickson Endowed Emeritus Faculty Award, the second such award from the University of California. With that research funding he has published a new paper on critical limits and critical values in *Clinical Chemistry and Laboratory Medicine*, which refines and updates the standard of care for notification of life-threatening diagnostic test results. Please see (https://www.degruyter.com/document/doi/10.1515/cclm-2024-0117/html). These data were also published in his article in the *Medical Laboratory Observer Clinical Laboratory Reference* 2024-25 (see https://www.clr-online.com/CLR_2024-25_Critical_Limits.pdf).

• In 2024, Dr. Kost will have been speaker at the Royal College of Pathologists of Thailand; keynoter and speaker in the International Symposium on POCT sponsored by the European Federation of Laboratory Medicine (EFLM) in Venice, Italy; three times visiting faculty and speaker at Naresuan University in Phitsanulok, Thailand; opening keynoter at the Critical and Point-of-care Testing International Symposium of the Association for Diagnostic and Laboratory Medicine (ADLM) in San Diego, California; and speaker for the Australian Association for Clinical Biochemistry and Laboratory Medicine in Sydney.

• In 2025, Dr. Kost will be an invited speaker in the POCT Satellite Symposium at the 26th IFCC-EuroMedLab Congress, in Brussels, May 18-22, and will deliver the invited David Rothfield Memorial Oration at the 62nd Annual Scientific Conference of the Australian Association for Clinical Biochemistry held in Auckland, New Zealand, October 13-16, among other activities in Southeast Asia.

• In support of global outreach, virtually all his twenty-two COVID-19 publications, research papers from Fulbright Scholar Awards, and papers supported by other funding are available open access, free to download, in part, supported by publication grants from the Libraries of the University of California.

• An avid trumpet player and soloist, he performed in Carnegie Hall, New York City, and frequently performs in the Mondavi Center for the Performing Arts on the Davis campus of the University of California as a member of the University Concert Band. He has been a soloist in England, China, Thailand, and the United States.