Clinical Microbiology in the Year 2025: Serologic and Host-Oriented Diagnosis

We have read with much interest and pleasure the forecasts on clinical microbiology in the year 2025 by Dunne et al. (1). We are convinced that the proposed microbial science fiction scenario is a true depiction of the future, but there might have been a few clouds in the crystal ball, blurring an aspect we have gazed upon with great clarity: serologic and host-oriented diagnosis. We also foresee Doctor Lane’s first name as not Jeffrey, but Penelope, since the feminization of the medical profession that had occurred previously in Europe was widely described in the United States in the late 2010s. On that Monday morning, Dr. Penny Lane’s sixth patient is a 19-year-old young adult whose chief complaint was cough, presenting with a febrile respiratory syndrome evolving for a week. After a thorough clinical examination of the patient (that allowed the practitioner and the patient to establish the trusting relationship that became all the more necessary after the 2018 Act denying fiduciary retribution for malpractice but replacing it with mandatory medical service and continuing education for MDs), Dr. Lane samples blood via a micropuncture of the ear lobe to perform a serologic assay using the SerOLogic LR add-on to the MyCrobe LR system. Within 15 min of the sampling, the diagnosis of a recent infection with *Chlamydia pneumoniae* is made by detecting low-avidity immunoglobulin antibody directed towards three of the major epitopes of this microorganism. Dr. Lane prescribes the treatment in the form of a single dose of prolonged-half-life antibiotic. The individual pharmacokinetic profile for the drug performed on the group practice’s PharmaPak analyzer insures optimal in situ concentrations and minimal side effects. She then prescribes a pan-allelic transcriptomal host assay (PATH assay) to establish whether the patient is at risk for endothelial degenerative disease (the role of *C. pneumoniae* in atherosclerosis had been established in the late 2000s, and the specific pattern of alleles expressed in the circulating monocyte-derived lineage of patients had been described shortly after). The regional microbiology laboratory is part of the Host Response to the Pathogen Integrated Network (HRPIN), a broad effort to integrate an individual patient’s likely response to specific microbiological agents, streamlining the treatment to best suit a person’s unique genetic makeup. Upon reception of the whole-blood sample, the laboratory submits it to the OLogic preprocessor to load the SerOLogic UltiMate multiparametric serology analyzer with the plasma and the PATH-OLogic Leuks with the cells for the transcriptomal profile of leukocytic lineages. The combined analysis of humoral and cellular components of the immune system asserts that the risk for endothelial degenerative disease is not significantly higher than for *C. pneumoniae*-seronegative patients.

The HRPIN regional microbiology laboratory performs on this day two more analyses ordered by Dr. Lane for her patients. One is a complete serologic panel for microbial agents involved in maternal-fetal infections, a routine test performed for the benefit of a woman whose pregnancy was diagnosed this very day. The other is a serologic follow-up for a male patient treated for *Helicobacter pylori*-related ulcer, coupled to a PATH assay to check the activation of the T-cell clone specific for *H. pylori*-associated gastric carcinoma detected at the time of diagnosis. All results are encrypted and broadcast for elective addition to the patient’s Portable Integrated Chart, electrovically made available to health professionals at the patient’s choice and precluding unwanted communications of data to others, in accordance with the Medical Privacy Act of 2009.

The future picture of clinical microbiology being thus completed, we are now free to face the most anguishing interrogation of all, which the technological wonders of the future have left in shadow: what kind of clothes will we be wearing in the lab by the year 2025?

**REFERENCE**


**Author’s Reply**

First, I knew that I would eventually find someone else in the field of microbiology with a penchant for clever television ads and Mel Brooks movies. We must get together over a glass of good French or California wine and redefine the future of the world. Second, in response to your parting question (“...what kind of clothes will we be wearing in the lab by the year 2025?”), I for one will be wearing a T-shirt commemorating the LIX Super Bowl Champion Detroit Lions! Third, if antibody avidity testing ever works, I’ll eat that T-shirt.

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