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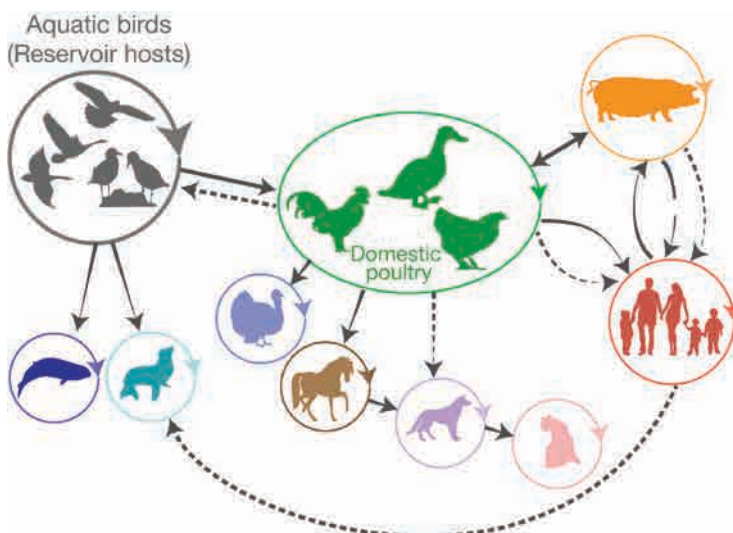
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The overarching goal of our lab is to identify factors that shape the emergence and evolution of rapidly evolving pathogens such as Influenza, Ebola, and Zika. To achieve this goal we conduct (1) disease surveillance in animal and humans, (2) characterize pathogens using next-generation sequencing methods, and (3) apply computational and statistical methods to integrate the sequence data with clinical, epidemiological and immunological data that are generated from disease surveillance and laboratory experiments using phylogeny-based methods. Our primary organism of study is influenza, due to its rapidly evolving small malleable genomes, although we have ongoing projects in gastroenteric pathogens such as Rotavirus and Enterovirus 71 and vector-borne pathogens such as Dengue.

Research Projects

1. Evolution and transmission mechanisms of Influenza virus
2. Global evolution of enteric pathogens
3. Phylogenetics of RNA viruses



Host ecology of influenza A viruses, indicating major hosts and pathway of emergence of pandemic viruses such as the 1918 Spanish Flu pandemic and the 2009 Swine Flu pandemic.

Selected significant publications:

1. Su YCF, Bahl J, Joseph U, Butt KM, Koay ESC, Oon LLE, Barr IG, **Vijaykrishna D**, Smith GJD. 2015. Phylogenetics of H1N1/2009 influenza reveals the transition from host adaptation to immune-driven selection. *Nature Communications* 6, 7952.
2. **Vijaykrishna D**, Holmes EC, Joseph U, Fourment M, Su YCF, Halpin R, Chuen RLT, Deng Y-M, Gunalan V, Lin X, Stockwell T, Federova NB, Zhou B, Spirason N, Kühnert D, Veronika B, Stadler T, Costa A-M, Dwyer S, Huang QS, Jennings L, Rawlinson W, Sullivan S, Hurt A, Maurer-Stroh S, Wentworth D, Smith GJD, Barr IG. 2015. The contrasting phylogenetics of influenza B viruses. *eLife* 4, e05055.
3. **Vijaykrishna D**, Smith GJD, Pybus OG, Zhuhua C, Bhat S, Poon LLM, Riley S, Bahl J, Ma SK, Cheung CL, Perera RAPM, Chen H, Shortridge KF, Webby RJ, Webster RG, Guan Y & Peiris JSM. 2011. Long-term evolution and transmission dynamics of swine influenza A viruses. *Nature* 473, 519–522.
4. **Vijaykrishna D**, Poon LLM, Zhu HC, Ma SK, Li OTW, Cheung CL, Smith GJD, Peiris JSM, Guan Y. 2010. Reassortment of pandemic H1N1/2009 viruses in swine. *Science* 328, 1529.
5. **Vijaykrishna D**, Bahl J, Riley S, Duan L, Zhang J, Chen H, Peiris JSM, Smith GJD, Guan Y. 2008. Evolutionary dynamics and emergence of panzootic H5N1 influenza viruses. *PLoS Pathogens* 4, e1000161.