

Viruses

- Viruses may contain RNA or DNA and may be enveloped or non-enveloped
- Coronavirus is single stranded, RNA, enveloped virus
- Viruses require host machinery and mechanisms to replicate
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Immune-enhancing therapies

- Zinc prevents actions of rna dependent rna polymerase and may limit the cytokine storm
- Zinc is also important in host barrier function
- Hydroxychloroquine is an ionophore for zinc, helping it enter the cell and exert its antiviral activity
- Azithromycin is an antibiotic that has demonstrated antiviral activity
- High dose vitamin C (in combination) is effective for treating cytokine storm during acute respiratory distress
- Vitamin C concentration rapidly decreases during infection and stress
- Phase 1 clinical trials are ongoing for the use of wormwood in COVID-19

Microbiology review

- Viruses infect every life form (plants, animals, and bacteria)
- A virion is the infectious particle of the RNA or DNA virus
- Bacteria in the soil make vitamins which get incorporated into plants
- A decrease of helminths (parasitic worms) in our food have been linked to possible increases in allergies and autoimmune diseases
- Most antivirals only target one virus, which becomes a problem because many viruses mutate rapidly

Herbal medicine

- Tea tree and eucalyptus oils have viricidal properties
- Functional medicine is “science-based”
- Natural medicine examines the whole self
- Plants have more genes than humans
- Epigenomics is the study of modifications made to gene expression – damage can be reversed
- Herbs utilize perturbation to hit multiple targets
- Garlic has many antimicrobial and immune modulating properties
- Golden seal has cholagogue which increases the production of bile (helps eliminate toxins)
- Elderberry is a treatment for some viral infections, but not a preventative
- Vitamin D deficiency has been associated with death due to COVID-19
- Vitamin D receptors are present on all immune cells

Building immunity

- Calcium flash is the first step in the immune response to healing
- Vitamin A is important for function and integrity of mucosal cells
- Protomorphogens can improve epigenetic outcomes
- Polysaccharide components of medicinal plants are immunostimulating

H. Pylori

- Omeprazole is a proton pump inhibitor traditionally used in the treatment of H. Pylori
- H. Pylori is a class 1 carcinogen