

# AYURVEDA AND INTEGRATIVE MEDICINE FOR IMMUNITY



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# AYURVEDA: ANCIENT WISDOM FROM INDIA

Ayu - life  
Veda - science

over  
3000 years  
oldest systems of  
medicine

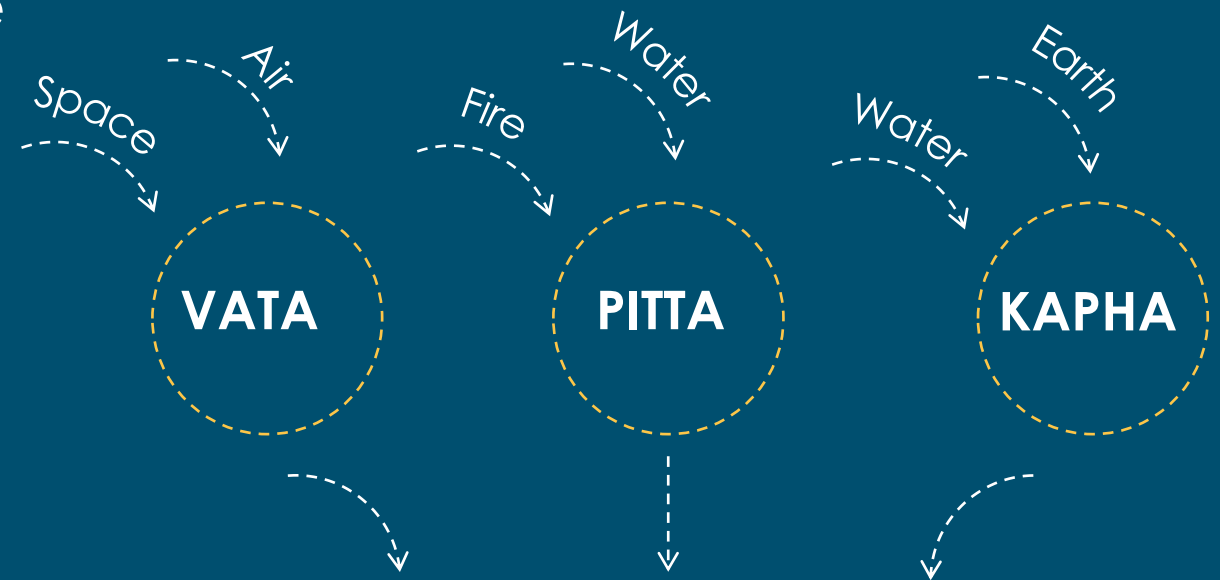
**“When diet is wrong,  
medicine is of no use.  
When diet is right, medicine  
is of no need.”**

~ Ayurvedic proverb



# THE PHILOSOPHY OF AYURVEDA

- 5 elements concept of the universe
- Body's innate self-healing ability
- A way of life
- Personalized & individualized program
- Detoxification and rejuvenation

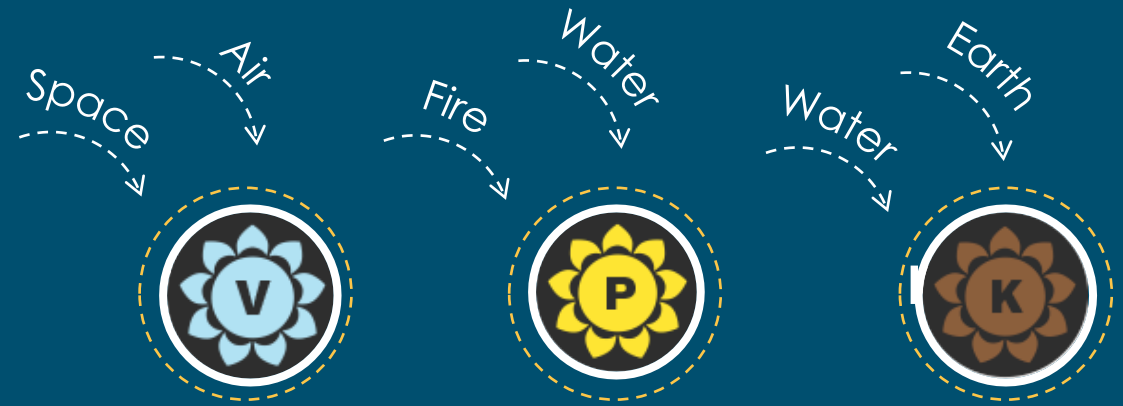


**All functions of the body**



# THE THREE DOSHAS

- **Balance** between *doshas*, and body, mind, and spirit, **results in health**
- **Prakruti** – “body type”, the original state of doshas
- **Vikruti** – current state of doshas

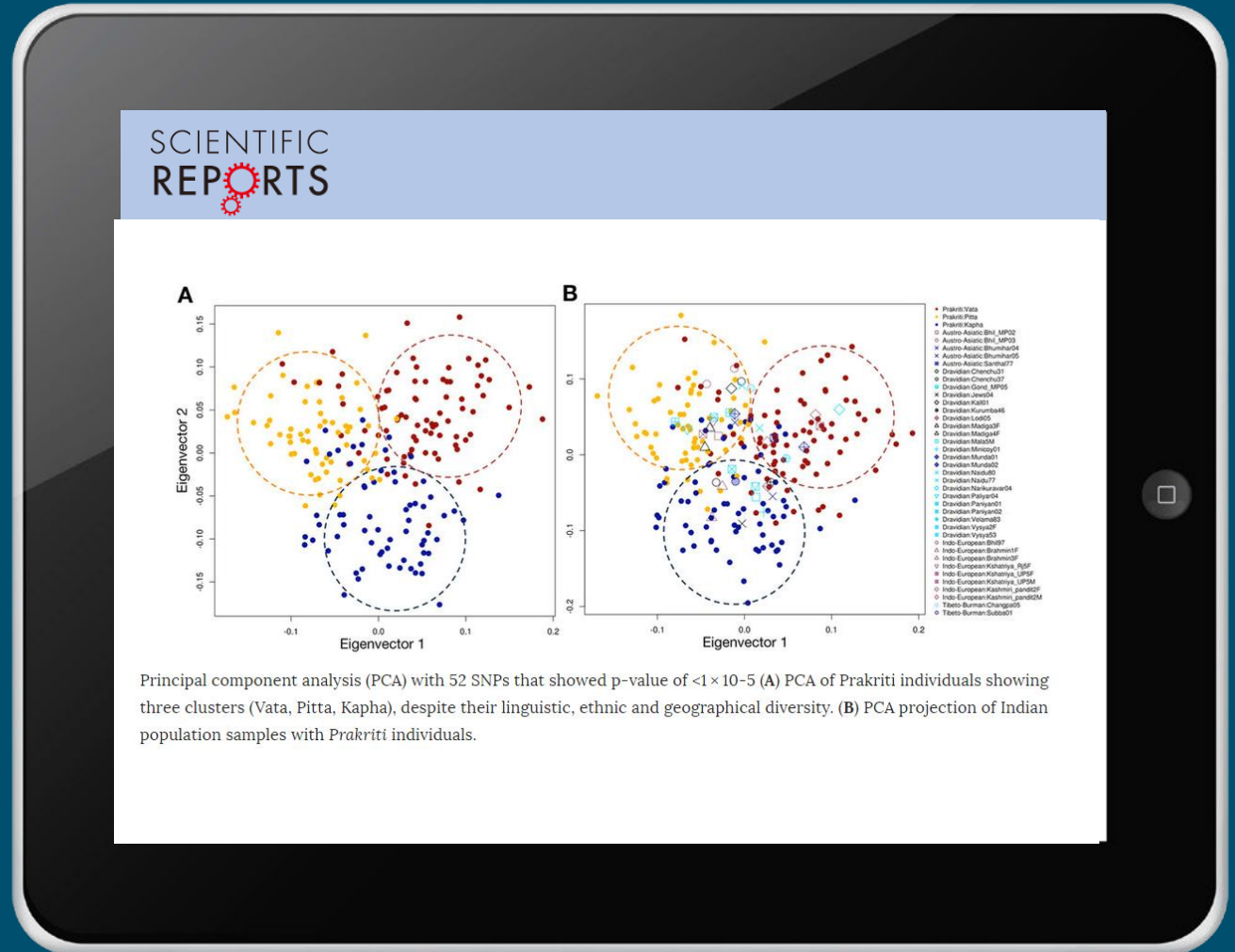


**All functions of the body**



# MODERN PROOF FOR AYURVEDA PRAKRITI CONCEPT

## Genetic differences between Prakritis



Govindaraj P et al. Genome-wide analysis correlates Ayurveda Prakriti. *Sci Rep.* 2015;5:15786.



# CONCEPTS OF OJAS AND SUBTLE ESSENCES

**Prana** – subtle vata element, responsible for the processes of circulation, digestion, and excretion

**Tejas** – counterpart of pitta, regulates cellular metabolism, intelligence and digestion

**Ojas** – a vital substance that is the refined end product of digestion, made from all 7 *dhatu*s or tissues, linked to kapha, responsible for strong immunity, vigor, and longevity



# ALL DISEASE STARTS IN THE GUT

1

## Predisposition

- low ojas
- poor diet and lifestyle
- excess sugar, alcohol
- stress
- environmental toxins

## Stage I

dosha imbalance and/or weakened Agni, leading to production of Ama (toxins)



# IMMUNITY MATTERS

The screenshot shows the top portion of a research article on the Nature Medicine website. The header is dark red with the 'naturemedicine' logo in white. Below the header, the article title is prominently displayed in bold black text. The authors' names are listed in a smaller font below the title. On the right side of the page, there is a navigation bar with icons for Search, E-alert, Submit, and Login. Below this is a blue button for 'Download PDF' with a download icon. Further down, there is a section for 'Associated Content' which includes a 'Collection' link for 'Coronavirus'. At the bottom of the right sidebar, there are tabs for 'Sections', 'Figures', and 'References', with 'Sections' currently selected. Below these tabs are links for 'Reporting Summary', 'Data availability', and 'References'. At the bottom of the article preview, there are statistics for 'Accesses', 'Citations', and 'Altmetric'.

**naturemedicine**

Correspondence | Published: 16 March 2020

## Breadth of concomitant immune responses prior to patient recovery: a case report of non-severe COVID-19

Irani Thevarajan, Thi H. O. Nguyen, Marios Koutsakos, Julian Druce, Leon Caly, Carolien E. van de Sandt, Xiaoxiao Jia, Suellen Nicholson, Mike Catton, Benjamin Cowie, Steven Y. C. Tong, Sharon R. Lewin & Katherine Kedzierska

*Nature Medicine* (2020) | Cite this article

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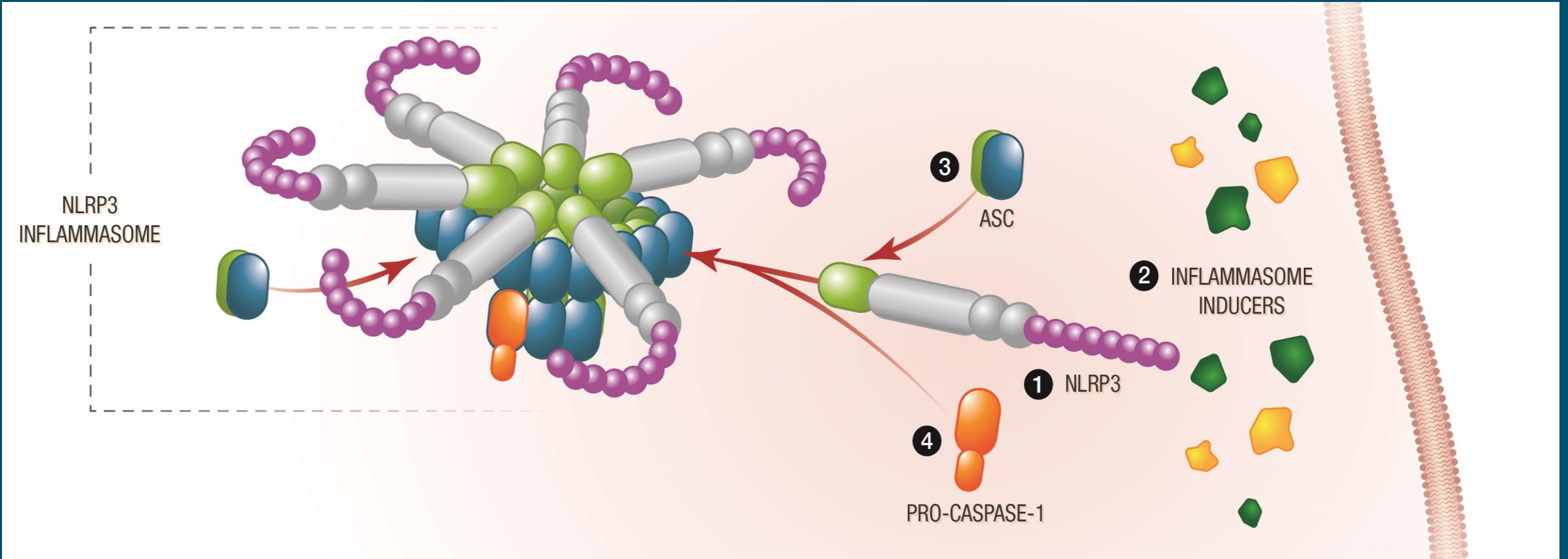
Reporting Summary  
Data availability  
References

Days following symptom onset, a large number of specialized helper T cells, killer T cells, and B cells — all of which are crucial immune cells — were active in the patient's blood samples





# EXCESSIVE INFLAMMATION → ARDS



Yuen, K et al. SARS-CoV-2 and COVID-19: The most important research questions. Cell Biosci 10,40 (2020)



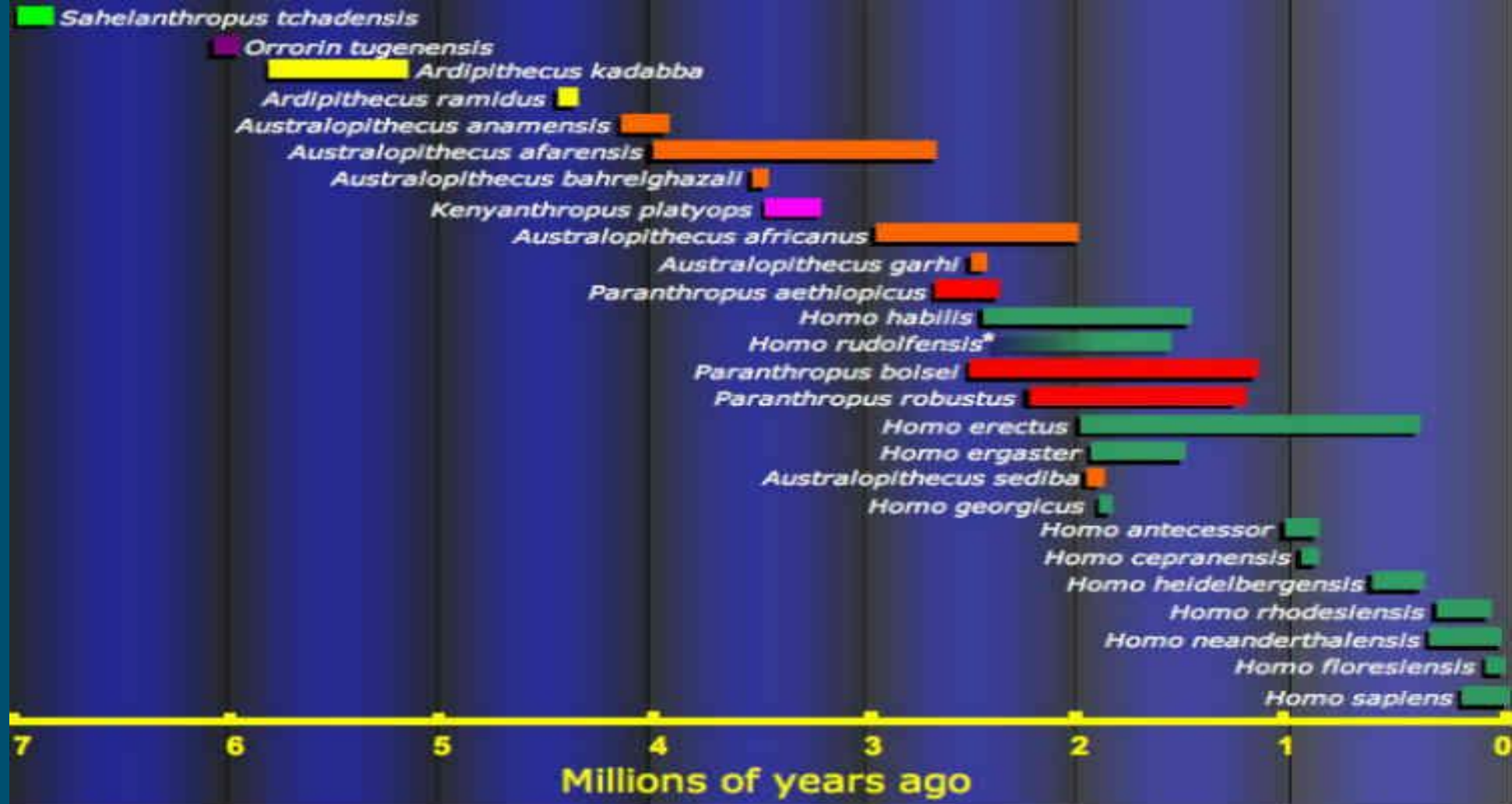
# INTEGRATIVE MEDICINE STRATEGIES FOR OPTIMAL IMMUNE FUNCTION

- Healthy diet and vitamins
- Spices
- Agni / gut health
- Herbs and supplements
- Sunlight and nature exposure
- Stress reduction techniques
- Exercise
- Sauna
- Nasya and oil-pulling
- Sleep/rest
- Positive Attitude
- Gratitude



# LIVE THE WAY YOU EVOLVED TO LIVE





>3 million years as  
hunter-gatherers

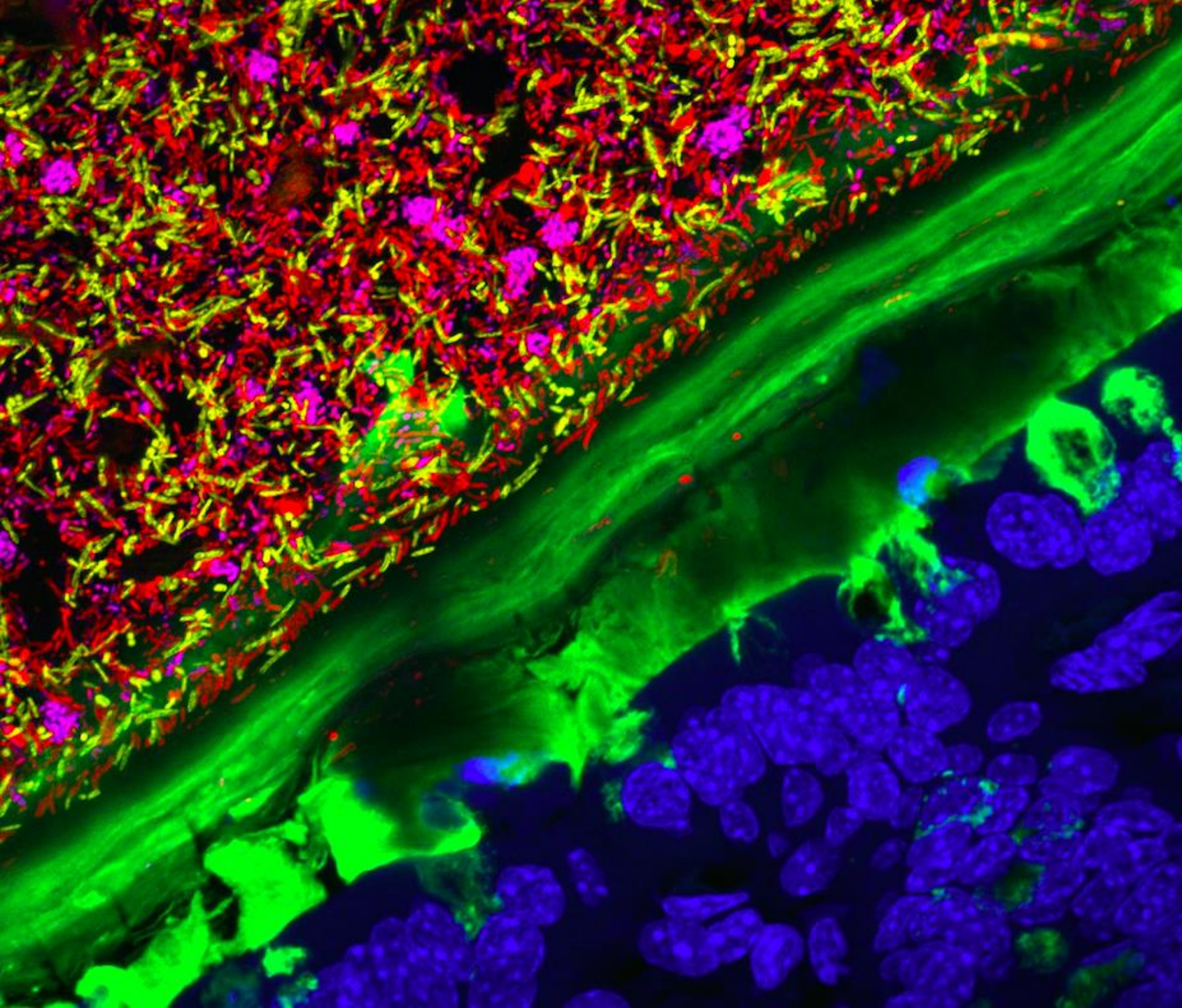
10,000 years ago –  
agriculture begins



# THE ORIGINAL PALEO DIET

- Our ancestors ate primarily wild plant foods such as leaves, tubers, roots, fruits, nuts, beans and legumes
- Hunted meat and fish *if available*
- # of different plants consumed was 100-120 per year, and >20 different species of vegetables and fruits every *single day*





Tropini et al. Cell Host  
Microbe. 2017;21(4):433–442.



# TOP 10 IMMUNE BOOSTING FOODS

- Leafy greens
- Mushrooms
- Cold water fish
- Bone broth
- Beet greens
- Pumpkin seeds
- Oranges
- Apples
- Fermented foods
- Apple cider vinegar



# LEAFY GREENS





# ARUGULA, RADICCHIO & LOOSE-LEAF LETTUCE



plant flavonoids reduce NLRP3 inflammasome signaling



# MUSHROOMS

Increase Roseburia, Bifidobacteria,  
Lactobacillus, and Akkermansia

Activate innate immunity

Anti-inflammatory



# COLD WATER FISH



Omega-3s  
Selenium  
Vitamin A  
Vitamin D  
(↓ NLRP3)



# BONE BROTH



# PUMPKIN SEEDS



zinc reduces viral replication and may prevent coronavirus entry into cells



# ORANGES



vitamin C inhibits NLRP3 inflammasome activation

vitamin C shortens the frequency and severity of colds and the incidence of pneumonia

Hemila, H. Vitamin C Supplementation and Respiratory Infections: A Systematic Review. *Mil Med.* 2004;169(11):90.



# BEET GREENS



- Rich source of trimethylglycine (TMG), which supports methylation and healthy liver function
- Anti-inflammatory nutrients – betalains, betanin, isobetanin, vulgaxanthin
- Betalains ↑ activity of glutathione-S-transferase – Phase 2 liver detox



# APPLES

skin contains a compound called quercetin, which may help ↓ NLRP3 & regulate the immune system



Choe J-Y, et al. Quercetin and Ascorbic Acid Suppress Fructose-Induced NLRP3 Inflammasome Activation by Blocking Intracellular Shuttling of TXNIP in Human Macrophage Cell Lines. *Inflammation*. 2017;40(3):980





# FERMENTED FOODS



# APPLE CIDER VINEGAR



# SPICES

- The most nutrient-dense foods on the planet
- Rich in antioxidants
- Reduce inflammation
- Support digestion
- Help with metabolic and glycemic balance



# GINGER

- Used traditionally in Ayurveda to fight infections and is especially helpful for sore throat, cold, and flu
- Fresh ginger is active against RSV, a common cause of lung infections in children
- Research on the antibacterial activity of ginger found that it inhibited the growth of multidrug resistant bacteria



# GARLIC

- Garlic alone contains over 100 distinct phytochemicals
- Allicin and other active ingredients suppress inflammatory cytokines such as IL-6, TNF-alpha



# HOW TO USE GARLIC

To maximize nutritional benefits prepare garlic the following way: Crush, mince or mash the garlic and then wait for 10 minutes.

Then you may either consume the garlic raw or sautee or fry the garlic and still get all its health benefits.

Do not cook immediately after crushing.



# TURMERIC

- Antiviral effects
- Reduces key cytokines like IL-1B
- Inhibits NLRP3 inflammasome

To maximize nutritional benefits :

Combine with black pepper during cooking (increases absorption 2000%)



# CINNAMON

- traditional use for antimicrobial properties – broad antibacterial and antifungal effects
- cinnamon inhibits the growth of pathogenic fungus *Candida albicans*
- the essential oil of cinnamon inhibited 5/6 harmful bacteria in one study





# HERBS AND SUPPLEMENTS DISCLAIMER

- no human trials for COVID-19
- informational only, not recommendation to take
- take only under supervision of a licensed practitioner
- not a substitute for proven, conventional measures



# AMLA (AMALAKI)

Indian gooseberry

Nutrient-dense

Rich source of vitamin C & phytochemicals

Significantly improved endothelial function, antioxidant status, systemic inflammation and lipid profile



Usharani P et al. Evaluation of the effects of a standardized aqueous extract of *Phyllanthus emblica* fruits: a randomised, double blind, placebo controlled clinical study. *BMC Complement Altern Med.* 2019;19(1):97



# CHYAWANPRASH

Made from 50 medicinal herbs and extracts,  
including Amla

Tridoshic ojas-building formula from *Caraka  
Samhita*

Preparation involves preparing a decoction of  
herbs, followed by extraction steps, mixture with  
ghee and honey, and addition of spices



# CHYAWANPRASH

- Rich in vitamin C, polyphenols and flavonoids, exhibits antioxidant activity, enhances the immune system, and fights infections
- In a 6-month-long randomized multicenter clinical study in children (5–12 years old) it was shown to improve immunity and energy levels

Sharma R et al. Chyawanprash: A Traditional Indian Bioactive Health Supplement. *Biomolecules*. 2019;9(5):161



# COD LIVER OIL

Rich source of vitamin A and vitamin D, which activate innate immune cells



# ELDERBERRY (SAMBUCUS NIGRA)



# ELDERBERRY

- Lab studies show that elderberry inhibits replication and viral attachment of human coronavirus NL63 (HCoV-NL63)
- May be most effective in the prevention or early stage of viral infections
- The Natural Standard Research Collaboration found that there is evidence to support the use of elderberry for influenza

Weng JR et al. Antiviral activity of Sambucus ethanol extract and related phenolic acid constituents against human coronavirus NL63. *Virus Res.* 2019;273:197767.



# ELDERBERRY INFUSION

## Ingredients

- 16 ounces of water
- 8 ounces elderberries
- 1/4 teaspoon cinnamon powder
- 1 teaspoon ground ginger or 2 inches fresh ginger
- 12 cloves
- 2 tablespoons of honey

1. In a saucepan on medium heat, add all ingredients (except honey) to water and simmer for 20 minutes
2. Allow to cool and filter
3. Add honey as desired and serve





# HONEY

- In a study with 139 children, ½ tsp of honey beat out dextromethorphan (a cough suppressant) and diphenhydramine (an antihistamine) in easing nighttime cough in children and improving their sleep
- Another study involving 105 children found that buckwheat honey trumped dextromethorphan in suppressing nighttime coughs

M Shadkam et al. The Journal of Alternative and Complementary Medicine. Jul 2010.787-793.



# ASHWAGANDHA

- Powerful adaptogenic herb
- Rasayana or rejuvenator, ojas-building
- Helps body adapt to stress - ↓ cortisol levels, ↓ stress and anxiety, and improves inflammation



# ASHWAGANDHA

Very heating herb so traditionally taken with milk

One study found that consuming Ashwagandha with cows' milk led to:

- increase in the level of white blood cell activation, most pronounced in CD56+ Natural Killer cells
- a statistically significant increase in the number of CD4+ T helper cells

Use caution if you have hyperthyroidism

Singh N et al. An overview on ashwagandha: a Rasayana (rejuvenator) of Ayurveda. *Afr J Tradit Complement Altern Med*. 2011;8(5 Suppl):208–213.



Sunlight directly activates immune cells by increasing their movement



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PUBLIC RELEASE: 20-DEC-2016

# Sunlight offers surprise benefit -- it energizes infection fighting T cells

GEORGETOWN UNIVERSITY MEDICAL CENTER



# SUNLIGHT

Sunlight exposure has been shown to improve vitamin D levels and also directly stimulate immune cells, independent of vitamin D levels.

“We all know sunlight provides vitamin D, which is suggested to have an impact on immunity, among other things. But what we found is a completely separate role of sunlight on immunity.” – Gerard Ahern, PhD



# BENEFITS OF SUNLIGHT

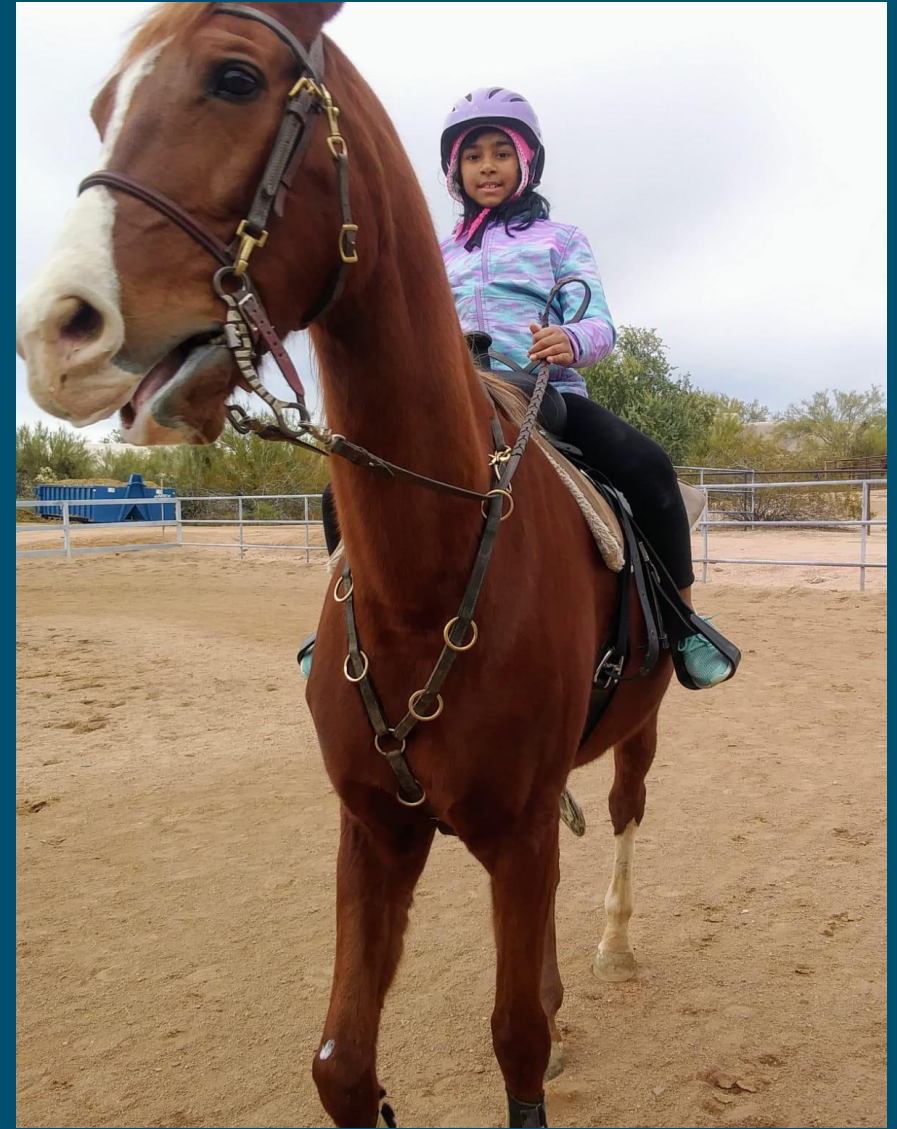
- Helps the body make Vitamin D, which is crucial for bone health, immune function, cancer prevention, and brain health
- Stimulates T cell movement
- Regulates our circadian rhythm, which affects sleep patterns, hormone regulation and cognitive function
- Exposure to sunlight during the daytime (even through a window) can help sleep quality at night



# CONNECTING TO NATURE

- Studies have shown increased numbers of NK cells in people who spent time in a forest vs. those who stayed in an urban environment
- 20 minutes in an “urban nature” locale can lower cortisol
- Houseplants, or pictures of nature scenes, have a similar calming effect – healing environment

Mary Hunter et al. Urban Nature Experiences Reduce Stress in the Context of Daily Life Based on Salivary Biomarkers. *Frontiers in Psychology*, 2019



# EFFECTS OF STRESS

- Psychological stress disrupts immune regulation and is specifically associated with increased pro-inflammatory cytokines such as IL-65
- Acute stress in animal studies increases IL-1B via NLRP3 inflammasome activation
- Increased severity and frequency of viral infections





# EXERCISE

- 20 minutes of walking daily is beneficial
- Yoga practice is very powerful
- For those who are more ambitious –  
Move like our ancestors did via HIIT



# SAUNA THERAPY

- Sauna – sweating is part of purvakarma, panchakarma
- Sauna bathing has been shown to reduce the risk of respiratory diseases in long-term studies
- Regular visits to the sauna also significantly reduce the frequency and severity of colds & flus in both children and adults



Eur J Epidemiol. 2017 Dec;32(12):1107-1111



# NASYA

- Ayurveda considers nasya, or nasal application of oil, to be a panchakarma therapy
- It is often recommended for conditions such as allergies, chronic rhinitis, sinusitis, dizziness, brain fog, anxiety, and depression
- Lubricates and nourishes respiratory tract

David Frawley, *Yoga and Ayurveda* (Silver Lake, WI: Lotus Press, 1999), 203–204.



# NASYA

- Administer nasya on an empty stomach an hour before or after a shower or exercise
- Lie down with the head tilted back and put 5 drops of nasya in each nostril
- Inhale deeply, then remain lying for a minute to allow the nasya to penetrate





# OIL PULLING

- Supports oral microbiome
- Used to strengthen the teeth, gums, and jaws and to prevent tooth decay, gum disease, and bad breath
- Removes toxins from the body and stimulates Agni, or digestive fire



# OIL PULLING

- Done on empty stomach with either sesame or coconut oil
- Take a teaspoon of oil into the mouth and swish and “pull” the oil around through teeth
- After about 5-10 minutes the oil is believed to have drawn up toxins and waste metabolites
- Do not swallow the oil – dispose in trash



# SLEEP

- Shorter sleep duration increases the risk of infectious illness
- One study found that less than 5 hours of sleep over 1 week increased the risk of developing a cold by 350% when compared to individuals who slept at least 7 hours per night
- Important to COVID-19, sleep deprivation increases CXCL9, a compound implicated in NLRP3 inflammasome activation





# EFFECTS OF POSITIVE ATTITUDE ON IMMUNE FUNCTION

- A surprisingly large effect on health
- 83 studies show that optimists enjoy better health in areas such as longevity, cancer survival, physical symptoms, and immune function
- A positive attitude improves T-cell counts, natural killer cell levels, interleukins, and other markers of immune function

H.N. Rasmussen et al., "Optimism and Physical Health: A Meta-analytic Review," *Annals of Behavioral Medicine* 37(3) (2009): 239–256



# A POSITIVE ATTITUDE

“Avoid a negative approach to life. Why gaze down the sewers when there is loveliness all around us? Life has a bright side and a dark side . . . Look only for the good in everything.”

— Paramahansa Yogananda



# GRATITUDE

- A growing body of research shows health benefits including better sleep, more well-being, less depression, and improved relationships
- Simple technique is to write a short email expressing your gratitude to someone in your life once a week, being specific about things you appreciate about them

L. Croke, "Cultivating gratitude can lead to mental, physical, and work-related benefits"  
AORN J. 2019 Nov;110(5):P5



# THE PALEOVEDIC DIET



A Complete Program to  
Burn Fat, Increase Energy, and  
Reverse Disease

Akil Palanisamy, MD

Resources:  
The Paleovedic Diet

Ayurveda and the Paleo  
Diet Online Course  
([click here](#))

