Revisiting Antibiotics

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THE INSPIRED Learning HUB
for Holistic Wellness Practitioners

2 Stories

What are we missing?

Other factors that are hard to compile

Standard Egyptian diet compared to North American diet

The condition of the people who told me the story

So antibiotics can have their place

Research on mice shows in many conditions – symptoms decrease

Autoimmune conditions – in particular

However, there's also research linking the use of antibiotics – the development of dysbiosis and autoimmunity

Worth noting that researchers think antibiotics can be a solution

The effect of antibiotics on gut bacteria has been studied

It is not one-size-fits-all

But there’s not good news

Review of 129 studies

Penicillin only had minor effects on the intestinal microbiota.

Amoxicillin, amoxcillin/clavulanate, cephalosporins, lipopolyglycopeptides, macrolides, ketolides, clindamycin, tigecycline, quinolones and fosfomycin all increased abundance of Enterobacteriaea other than E. coli

Not all antibiotics do the same damage

Review concluded:

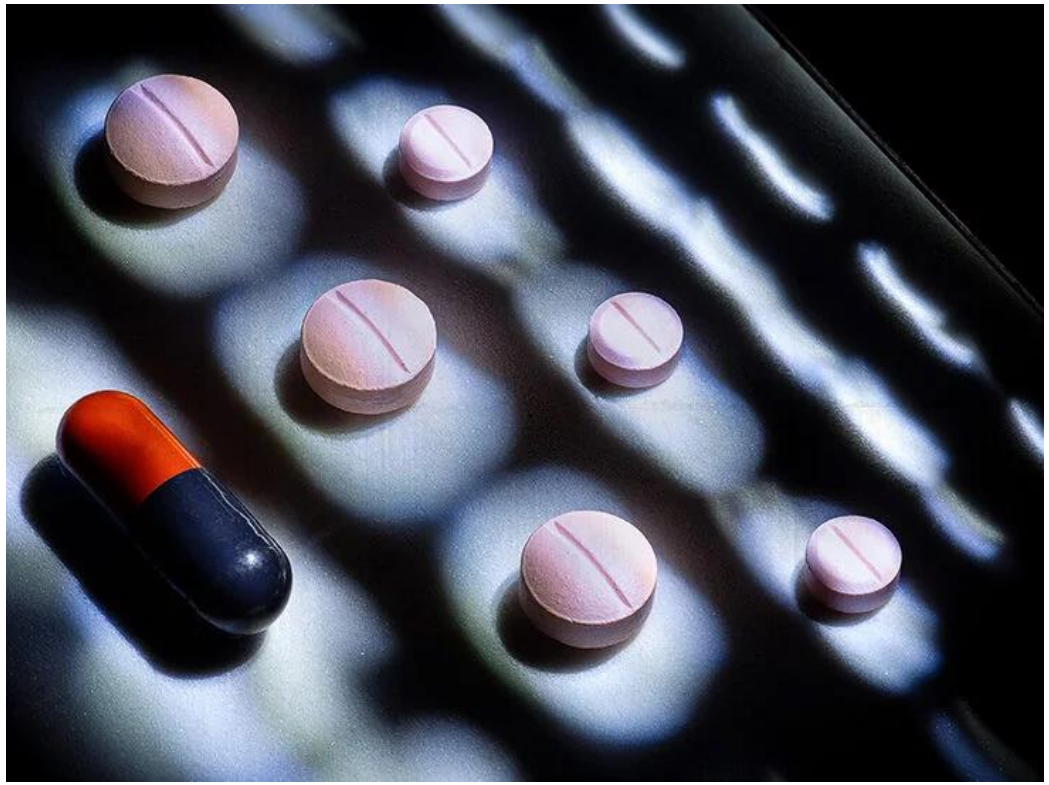
Antibiotics have profound and sometimes persisting effects on the intestinal microbiota, characterized by diminished abundance of beneficial commensals and increased abundance of potentially detrimental microorganisms.

Understanding these effects will help tailor antibiotic treatment and the use of probiotics to minimize this 'collateral damage'.

Thirty-one articles with low or unclear risk of bias showed that antibiotics impact the gut microbiota by causing rapid and diminished levels of bacterial diversity and changes in relative abundances.

This is a big concern

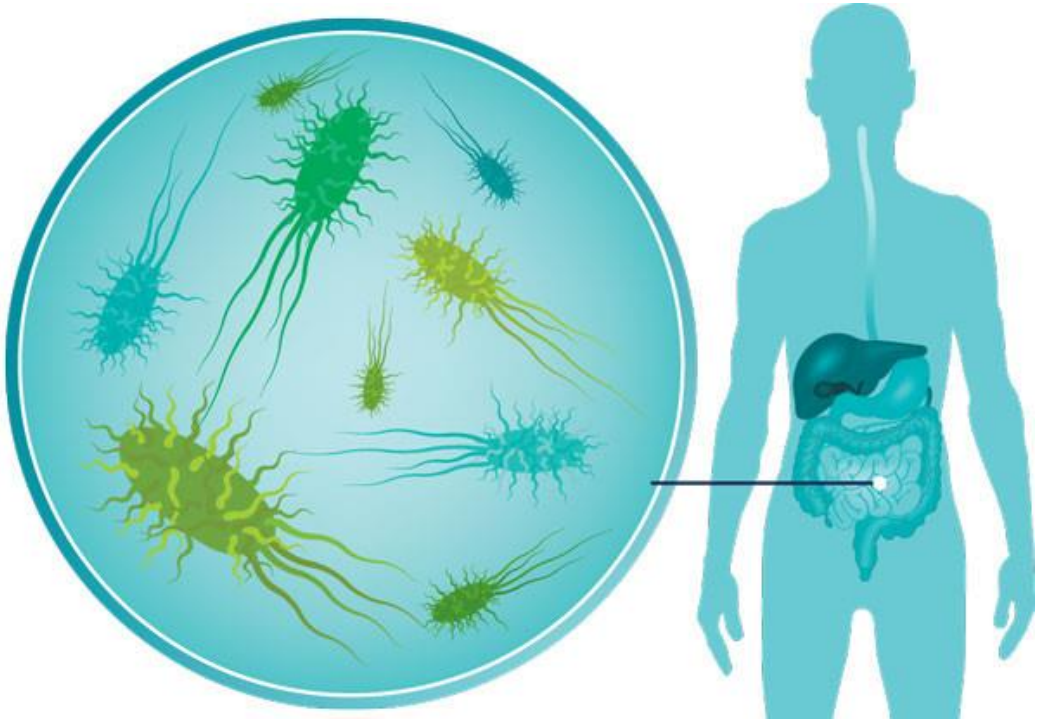
We don’t know what we’re losing specifically when we lose diversity



But after treatment stopped, gut bacteria recover, in most individuals, to their baseline state within a few weeks

Some studies suggested longer-term effects from 2 to 6 months.

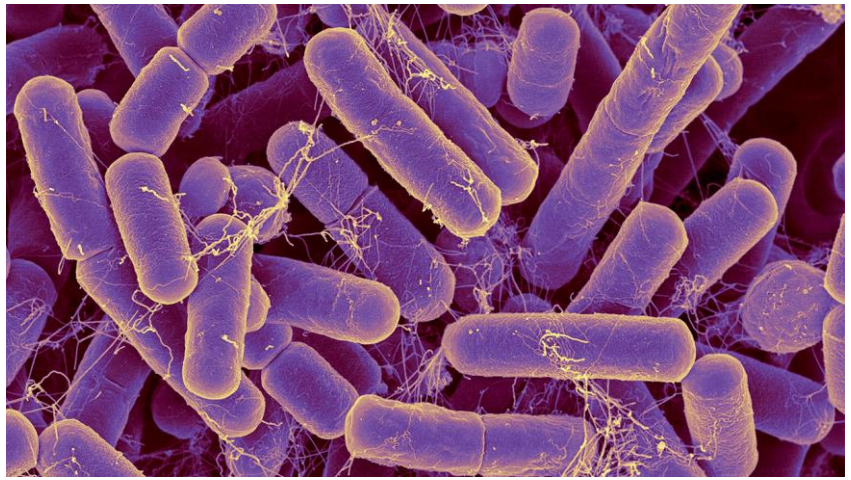
Uniform consistency in methodology makes the studies prone to biases and other confounding factors.



Doxycycline was associated with a marked short-term decrease in *Bifidobacterium* diversity.

Clarithromycin decreased the populations of Enterobacteria, and the anaerobic bacteria *Bifidobacterium* sp and *Lactobacillus* sp in numbers and diversity for up to 5 weeks.

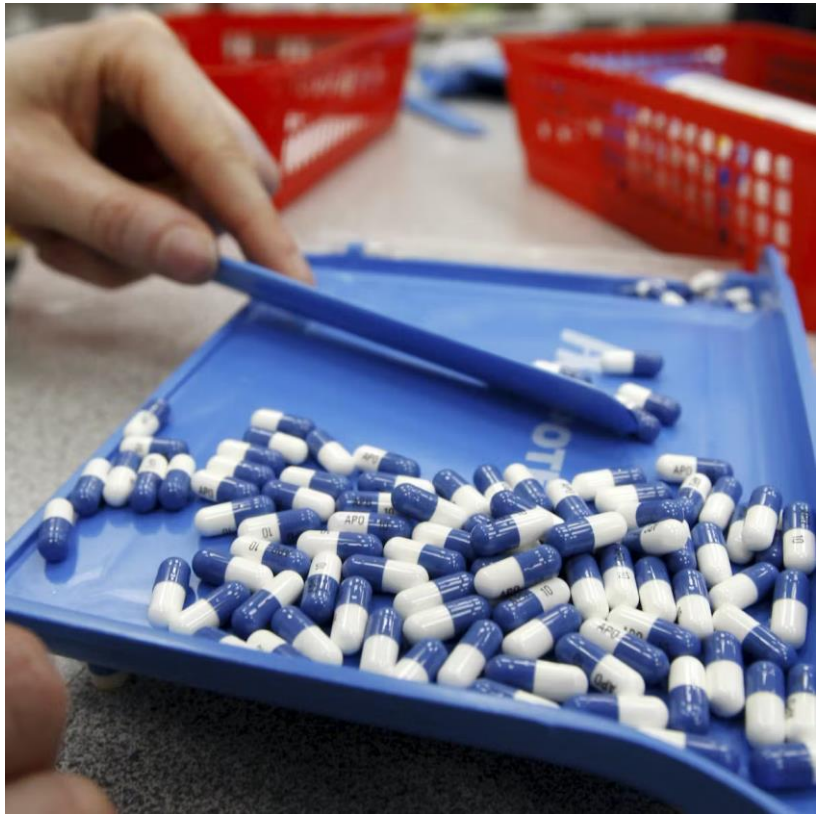
Phenoxymethylpenicillin, nitrofurantoin and amoxicillin had very little effect on the gut microbiome.



Meta-analysis review

Looked at the relationship between exposure to antibiotics during the first 2 years of life and the risk of allergies/atopies including hay fever, eczema, food allergy, positive skin prick testing (SPT), or elevated allergen-specific serum/plasma immunoglobulin (Ig) E levels later in life.

Early-life exposure to antibiotics appears to be related to an increased risk of allergic symptoms of hay fever, eczema, and food allergy later in life.

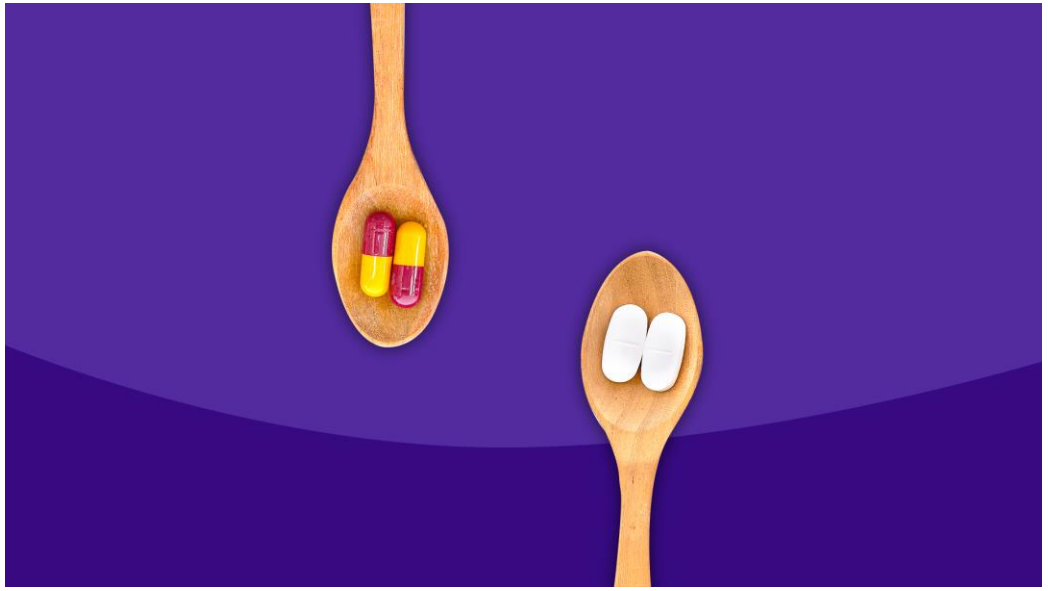


Probiotics vs Antibiotics

Probiotics may reduce the risk for certain infectious diseases and thereby reduce the need for antibiotics.

Probiotics may reduce the risk for antibiotic-associated diarrhea

Probiotics do not contribute to the spread of antibiotic resistance and may even reduce it



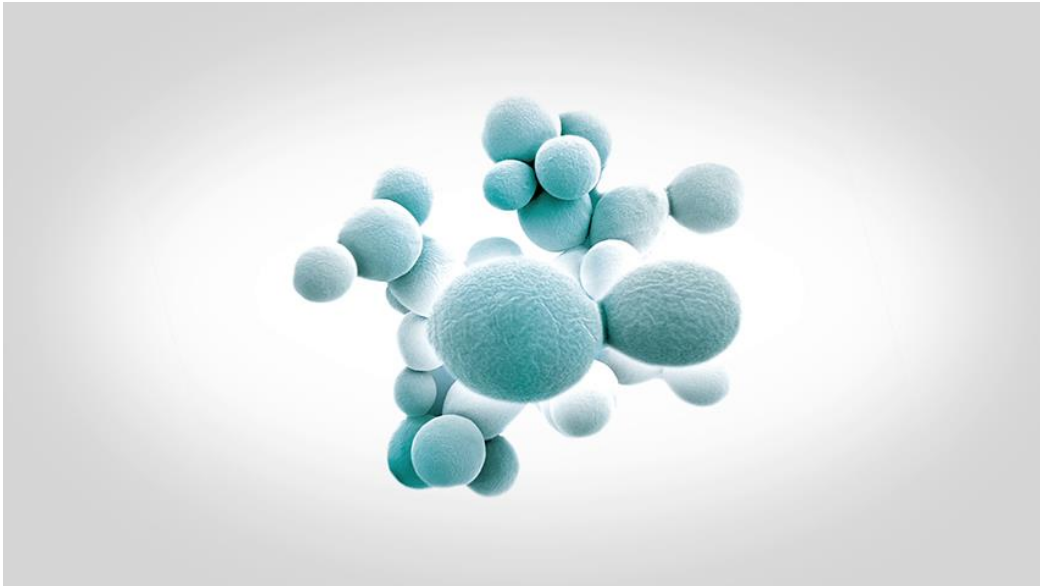
Probiotic studies are hit-and-miss – too many factors to control for

Studies on Saccharomyces Boulardi show it helps fight bacteria

Also help protect residential bacteria

As a yeast strain can help protect against yeast overgrowth (when on antibiotics)

Good choice while on antibiotics



Two other players

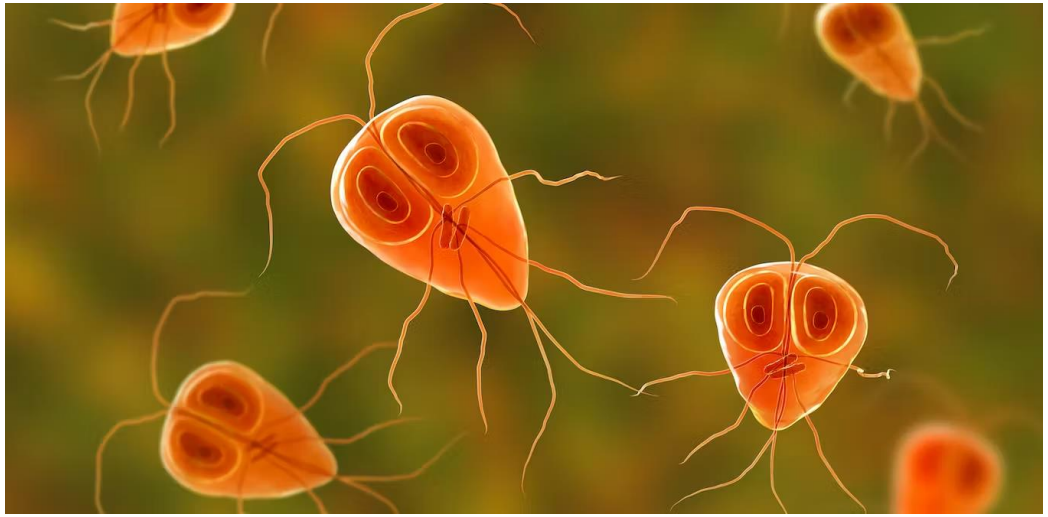
Not just about good vs bad bacteria

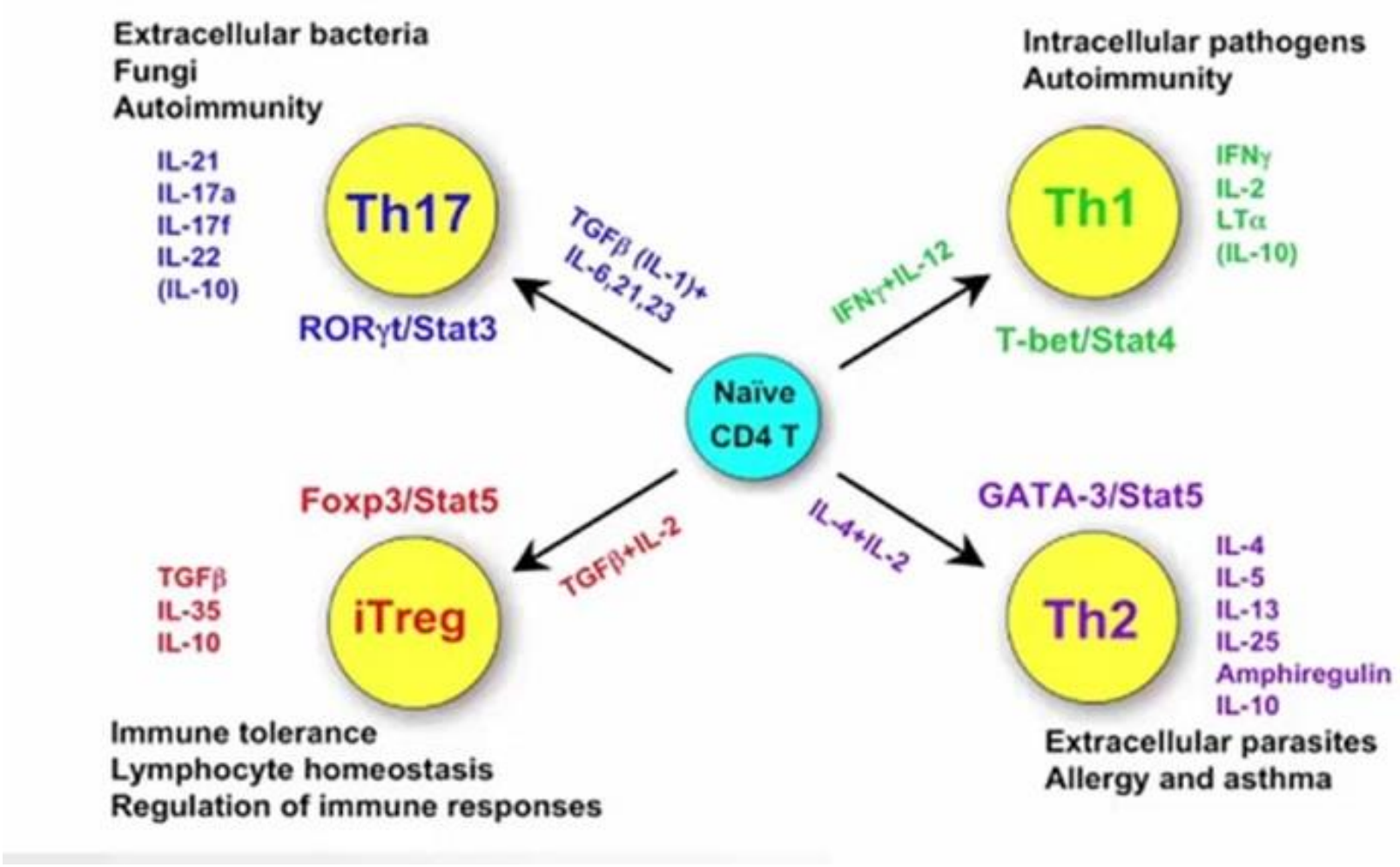
1. Parasites

2. Fungi

Both receive an opportunity to proliferate when a person is on antibiotics

Good bacteria keep them in check but antibiotics do not have the same ability



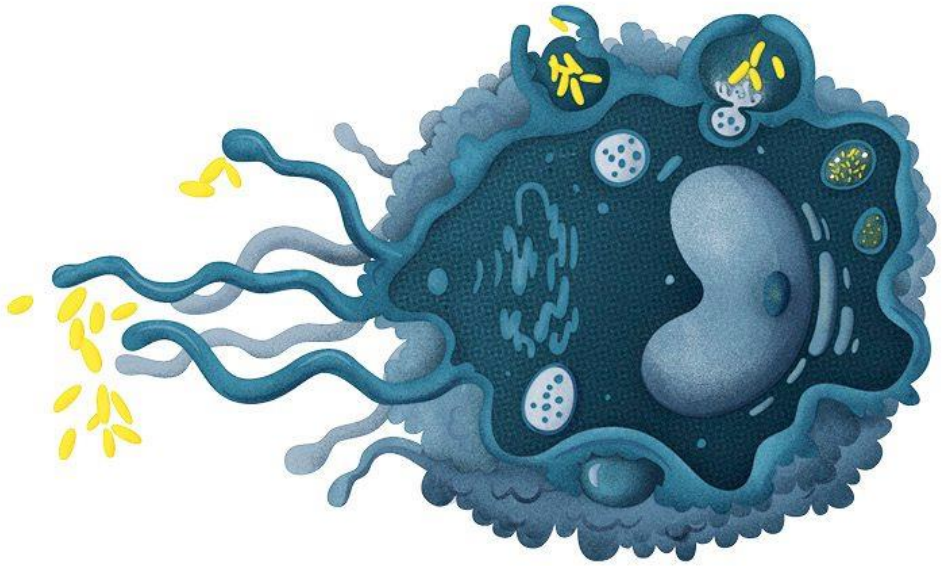

Extracellular bacteria
Fungi
Autoimmunity
IL-21
IL-17a
IL-17f
IL-22
(IL-10)
Th17
RORγt/Stat3
TGFβ (IL-1)+
IL-6,21,23
Intracellular pathogens
Autoimmunity
IFNγ
IL-2
LTα
(IL-10)
Th1
T-bet/Stat4
IFNγ+IL-12
Naïve
CD4 T
Foxp3/Stat5
TGFβ
IL-35
IL-10
iTreg
TGFβ+IL-2
GATA-3/Stat5
IL-4+IL-2
IL-4
IL-5
IL-13
IL-25
Amphiregulin
IL-10
Th2
Immune tolerance
Lymphocyte homeostasis
Regulation of immune responses
Extracellular parasites
Allergy and asthma

Macrophages respond to gut micro bacteria

Antibiotics, inhibiting gut microbes leads to hyperresponsive to bacterial stimulation, producing excess inflammatory cytokines

Especially the Th1 pathway

Increases potential for chronic inflammation



What we can do

Be aware of the existing gut situation of the client

Work on gut before hand

Take probiotics, prebiotics, and s. boulardi during

Consider an antimicrobial formula that covers parasites and yeast

Be aware of any potential symptoms – colon issues, nausea, bloating, that occur post antibiotics