CiBari
il cibo della salute

Nutri
Previeni

A tavola con la fertilità: il potere del cibo nella salute riproduttiva

Livia Galletti

Genetica

Ambiente (ecologia)

Salute riproduttiva

Stato socio-economico

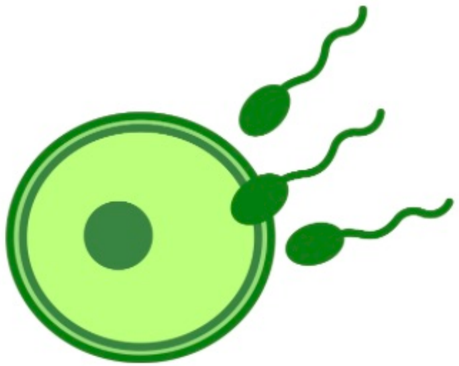
Stile di vita

Nutrizione

Stress

Attività fisica

Sonno



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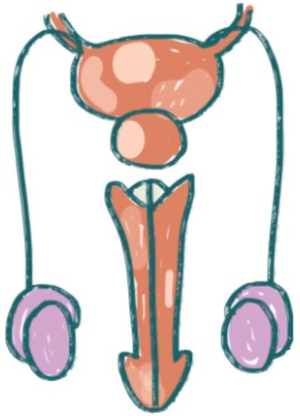
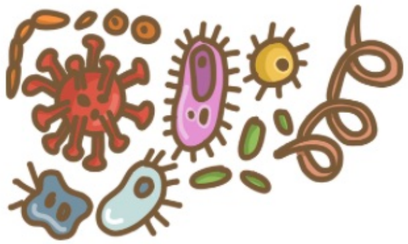
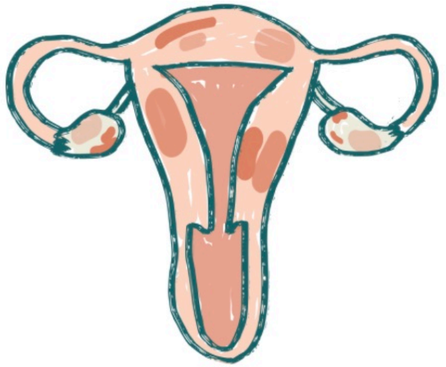
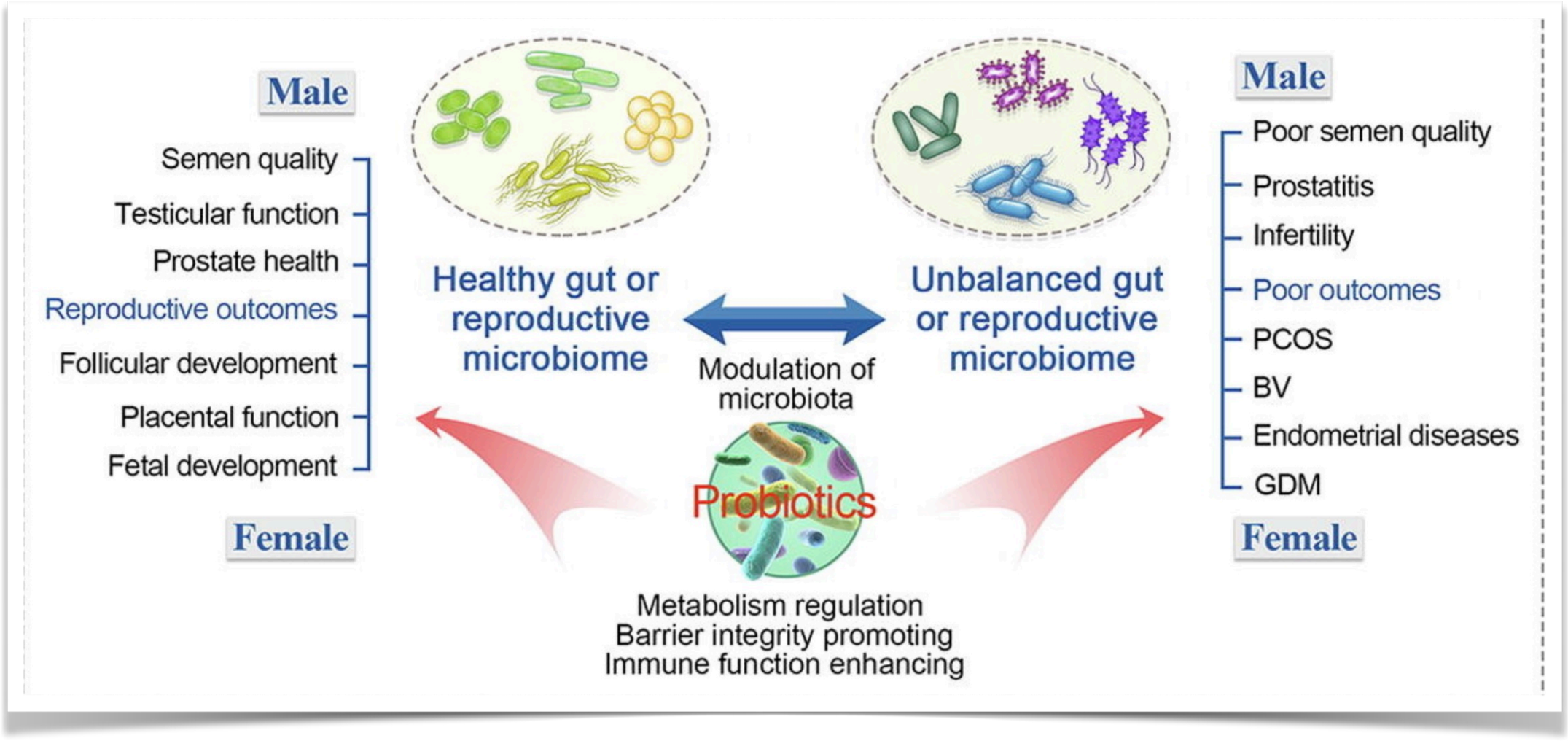
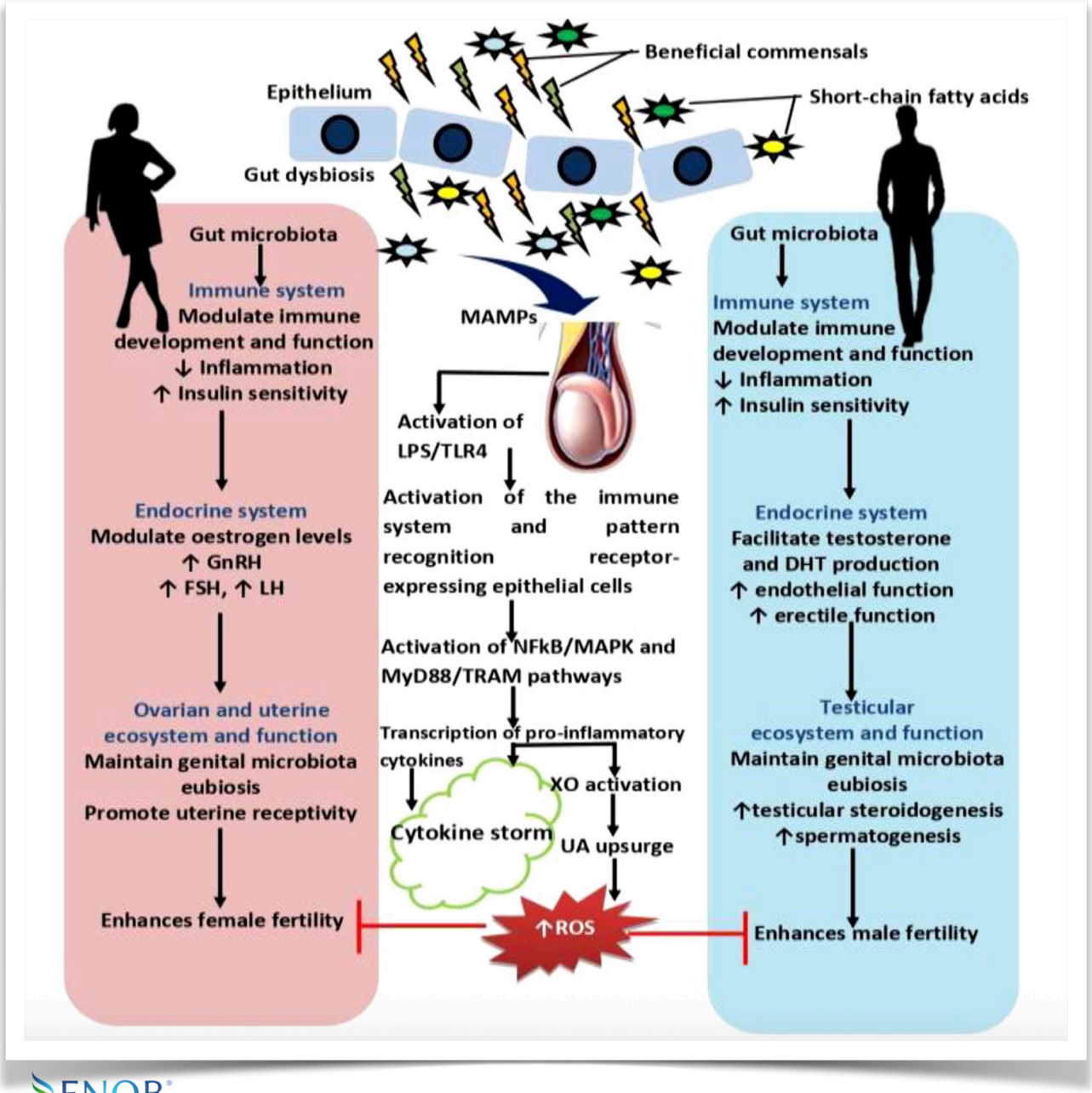








Feng et Liu Computational and Structural Biotechnology Journal 20 (2022



Ashonibare et al, Front. Immunol.2024

Funzionalità

Qualità cellulare

Psiche

Assetti ormonali

Nutrizione

Integrità delle barriere

Assetti metabolici

Qualità tessutale

Attecchimento

Accrescimento

Stress ossidativo

Nutrients/foods to increase fertility

Carbohydrates

- ✓ 45-60% of daily calories required.
- ✓ Upto 78% intake cause higher risk of ovulatory infertility.

Proteins

- ✓ 10-35% of daily calories required.
- ✓ Arginine, glutamine, aspartic acid, tryptophan and tyrosine are essential.
- ✓ Vegan diet suggested.

Healthy fats

- ✓ 20-35% of daily calories required.
- ✓ Necessary fatty acids ranging from 100-1000 mg/55 kg of body weight of the lactating women.

Foods to avoid

- Trans fats
- Refined sugars
- Excess caffeine
- Animal protein
- Alcohol
- Tobacco smoking

Oxidative stress

O_2 H_2O_2 OH

Protein damage

Lipid peroxidation

DNA damage

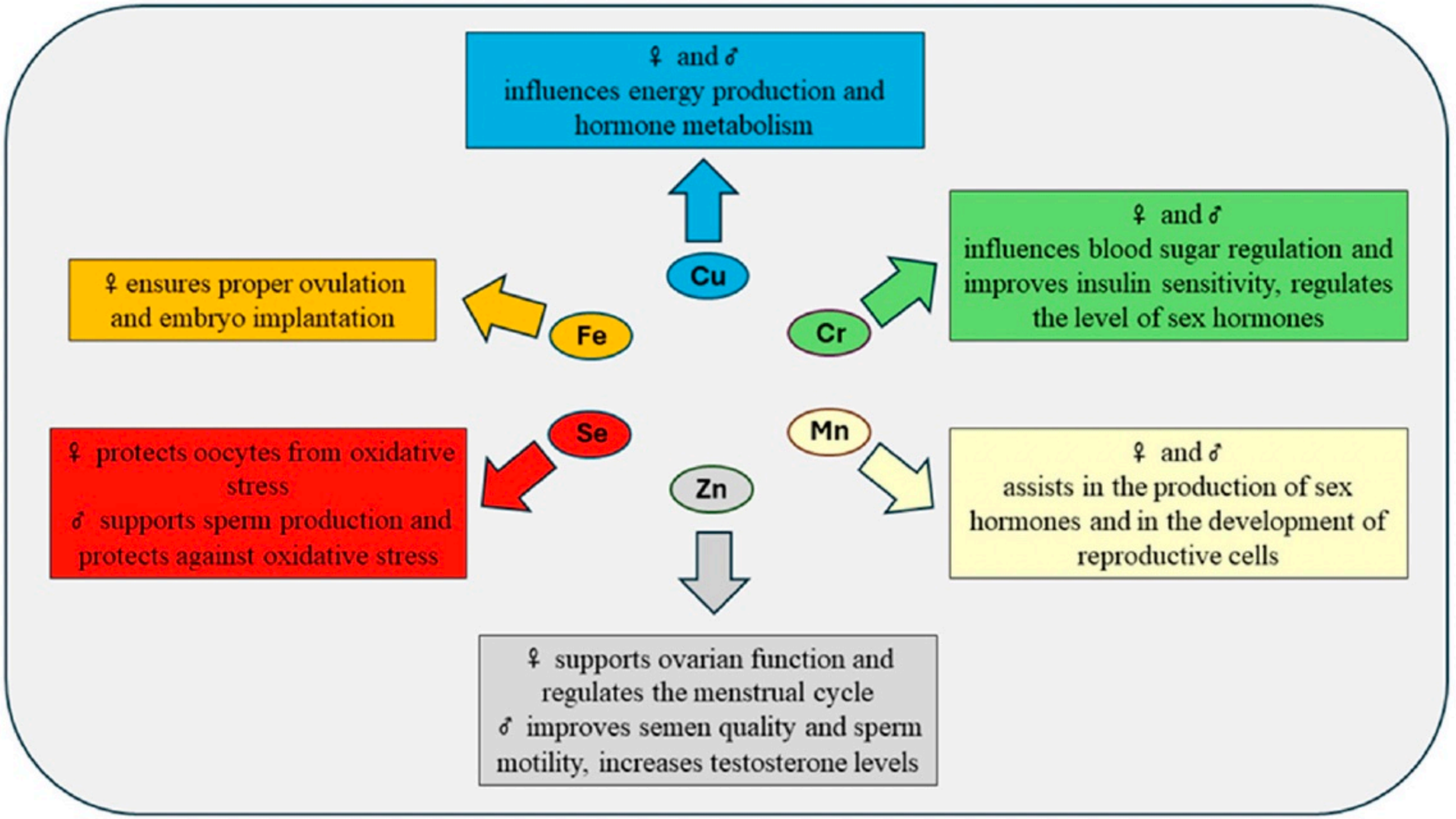
Bio-membrane damage

Infertility

Ma et al, Food Science and Nutrition, 2022

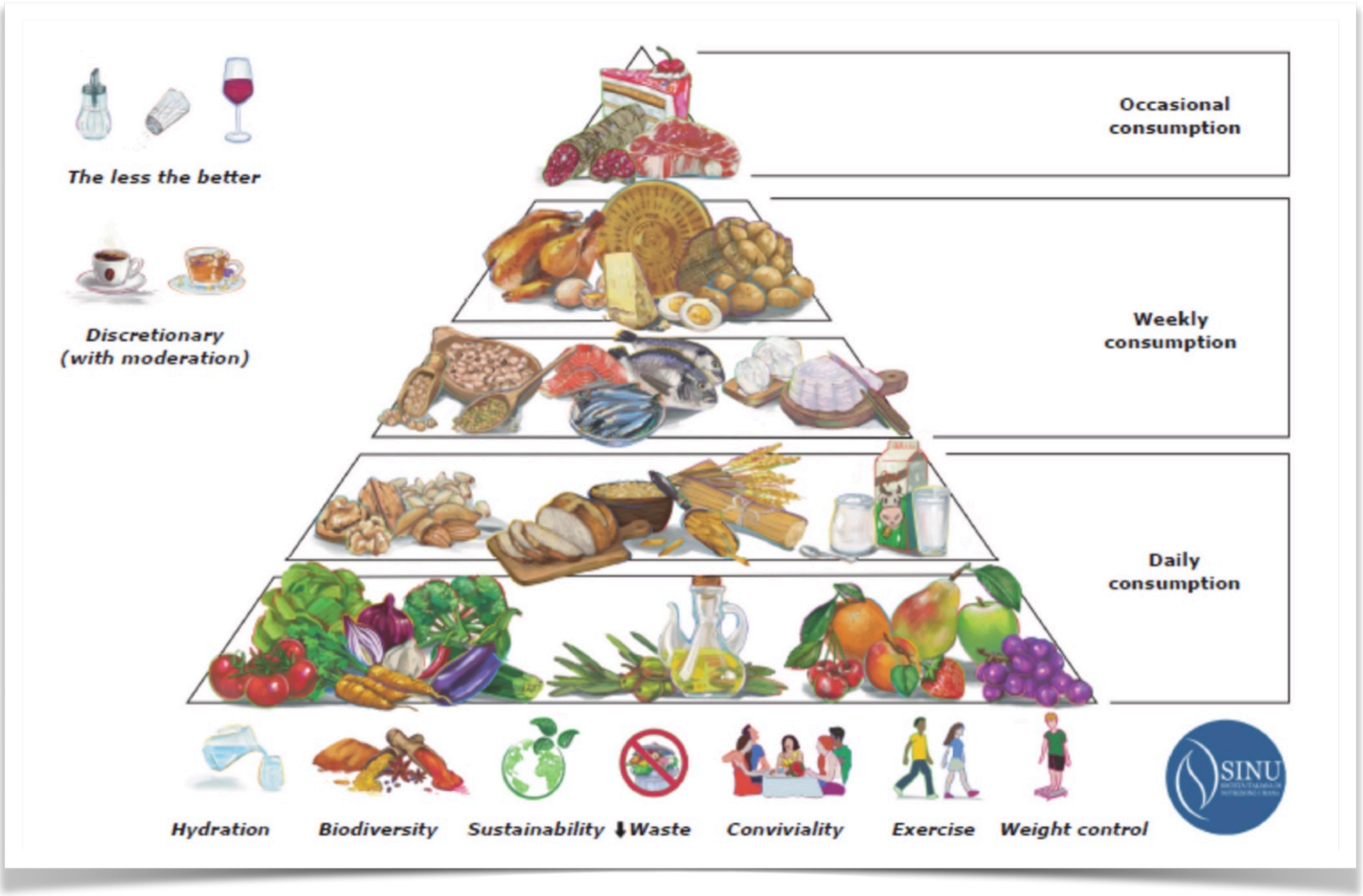
Micronutrient	Description	Effect on female	Effect on male	Recommended dose	Consequences of deficiency	Sources	References
Folic acid	• Known as vitamin B9 • Essential compound involved in key biochemical processes	• Improves chances of pregnancy • Reduces risk of ovulatory infertility	• Provides carbon for DNA synthesis and methylation • Critical to spermatogenesis	400 µg/day	• Premature birth • Reduced intrauterine growth • Increases risk of diabetes-associated congenital disabilities	Vegetables, fruits, nuts, seafood, eggs, dairy, meat	Barchitta et al. (2020), González Rodríguez et al. (2018), National Institutes of Health (2008)
Calcium	• Plays a role in reproductive health • Facilitates fertilization	• Creates alkaline environment in vagina • Follicular production • Oocyte activation and maturation	Regulates sperm motility	1 g/day	• Hypertensive disorders of pregnancy • Osteopenia, paranesthesia • Muscle cramps, tetanus • Delayed fetal growth • Mineralization in the fetus	Dairy products, cabbage, kale, broccoli, almonds, tofu, sardines with bones	Peacock (2010), Simopoulos (1999)
Iron	• Maintenance of healthy red blood cells • Oxygen transport in the blood • Immune function • Free radical homeostasis	Helps the fertilized ovum implantation process	• Essential to ejaculate fluidity • Maintains sperm pH • Sources of ferritin, which protects testicular tissue • Developing sperm	30–60 mg/day	• Risk of preterm birth • Decreased defenses against infection • Abnormal psychomotor development and cognitive impairment in infancy	Beans, vegetables, cereals, breads	Martin et al. (2016), Tremellen and Pearce (2015)
Vitamin B12	• Known as cobalamin • Cofactor in DNA and fatty acid synthesis • Amino acid metabolism	• Prevents spontaneous abortion • Necessary for the development and functionality of the placenta	• Improves the sperm quality	50 µg/day	• Associated with abnormal estrogen level that interferes with implantation of fertilized egg	Fish, meat, poultry, eggs, milk	González Rodríguez et al. (2018), Visentin et al. (2016)
Selenium	• Selenoprotein • Plays a potential role in both female and male fertility	• Placenta development • Adequate development of the fetus' nervous system	• Maintains the spermatozoa integrity and viability • Protects them from oxidative damage	60 µg/day	• Increases risk of pregnancy complications • Fetal growth restriction • Increases thyroid hormone • Alters the placental function	Nuts, seafood, fish, shrimp, muscle meats, cereals, dairy products	Mistry et al. (2012), Qazi et al. (2018)
Zinc	• Plays a key role in fertility for both female and male • Has a greater importance for men	• Involved in capacitation and fertilization in the female reproductive tract	• Testosterone synthesis • Sperm viability • Testicle development	20 mg/day	• Preterm delivery • Stillbirth • Fetal neural tube defects • Fetal growth restriction	Oysters, eggs, red meat, poultry, seafood, beans, nuts, grains, dairy	Kerns et al. (2018), Van Tienhoven (1968)
Vitamin E	• A vital antioxidant in the cell membrane • Supports reproductive functions	• Participates in fertilized egg cell implantation and placenta development	• Supports reproductive function in men • Increases sperm quality and quantity	22–30 mg/day	• Placental aging • Vascular endothelial injury • Disorders of pregnancy • Placental abruption • Abortion • Premature birth	Nuts, seeds, vegetable oils, green leafy vegetables, fortified cereals	Buhling and Grajecki (2013), Rosen and Gallagher (2011)
Vitamin A	• Supports the immune system • Protects the gonads, reproductive tissues from oxidative stress	• Affects ovarian follicular growth, uterine environments, and oocyte maturation	• Has influence on sperm morphology and concentration	370 µg/day	• Stops puberty in females and males • Predisposes to low rates of fertilization and embryo mortality • Reduces male sexual desire	Liver, fish oil, eggs, milk, leafy greens, vegetables, tomatoes, fruits	Cordova-Izquierdo (2016), Simopoulos (1999)
Vitamin C	• Aiding in tissue, hormone development • Cofactor for enzymes, reducing oxidative damage	• Essential for collagen biosynthesis • Vital for adequate ovarian follicle growth and also for the ovulation and luteal phases	• Affects the integrity and structure of sperm • Promotes an environment for sperm to thrive	85 mg/day	• Incidence of severe preeclampsia	Citrus, berries, pepper, kiwis, broccoli, brussels sprouts, tomatoes, potatoes	Buhling and Grajecki (2013), National Institutes of Health (2008)

Ma et al, Food Science and Nutrition, 2022

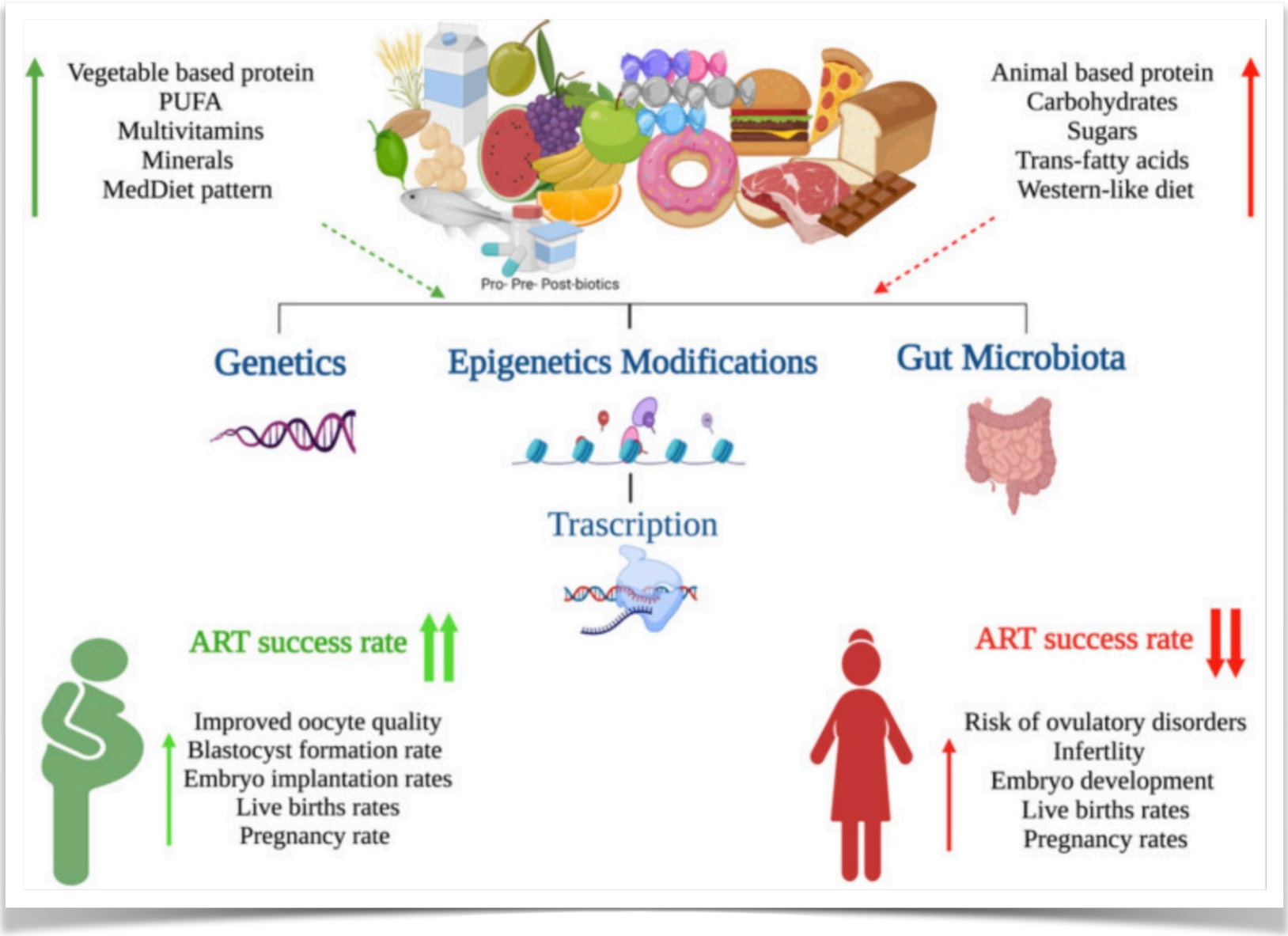


Wróblewski et al, Int J Mol Sci 2024

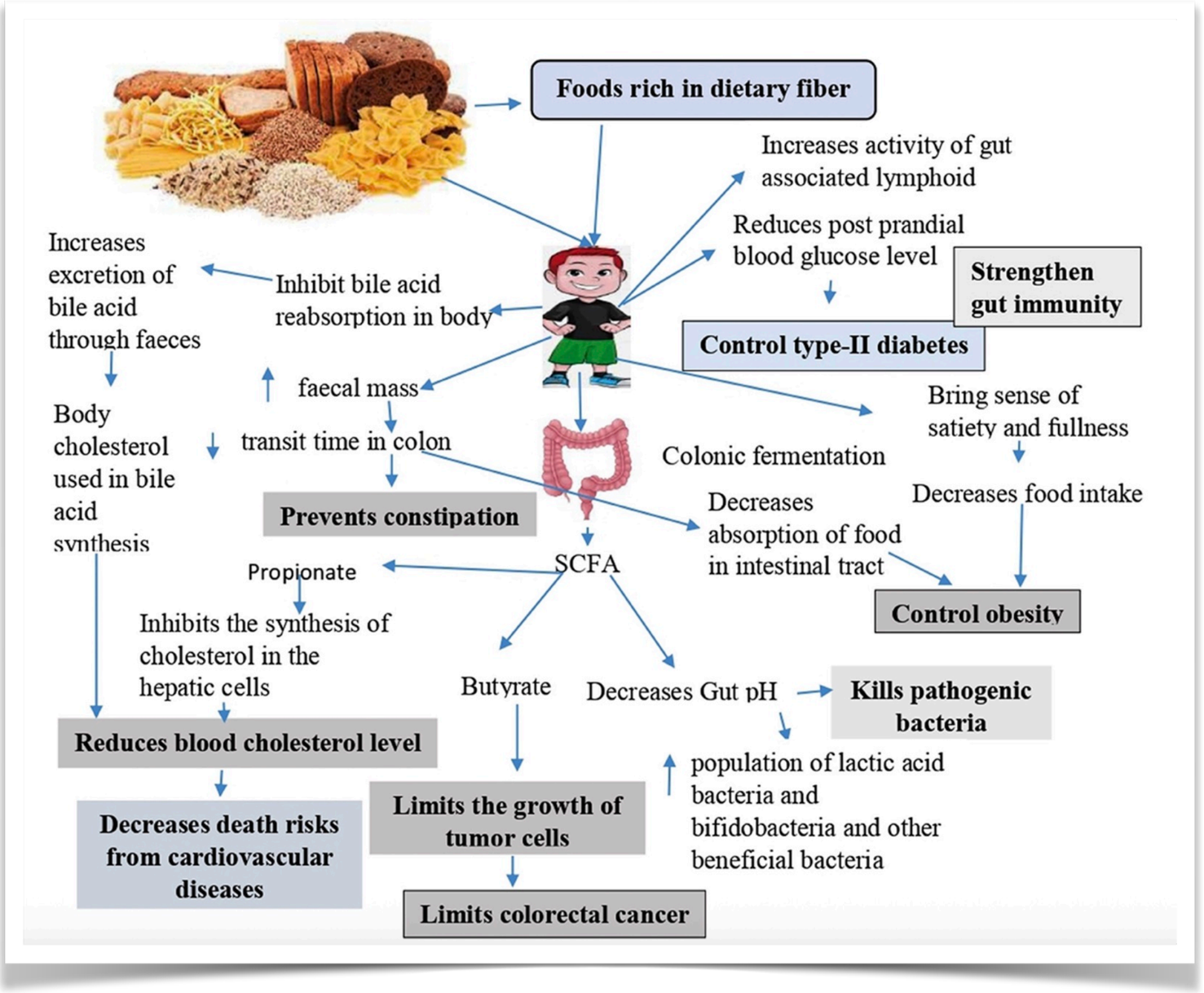
In prevenzione



Sofi et al, Nutrition, Metabolism and Cardiovascular Diseases 35 (2025

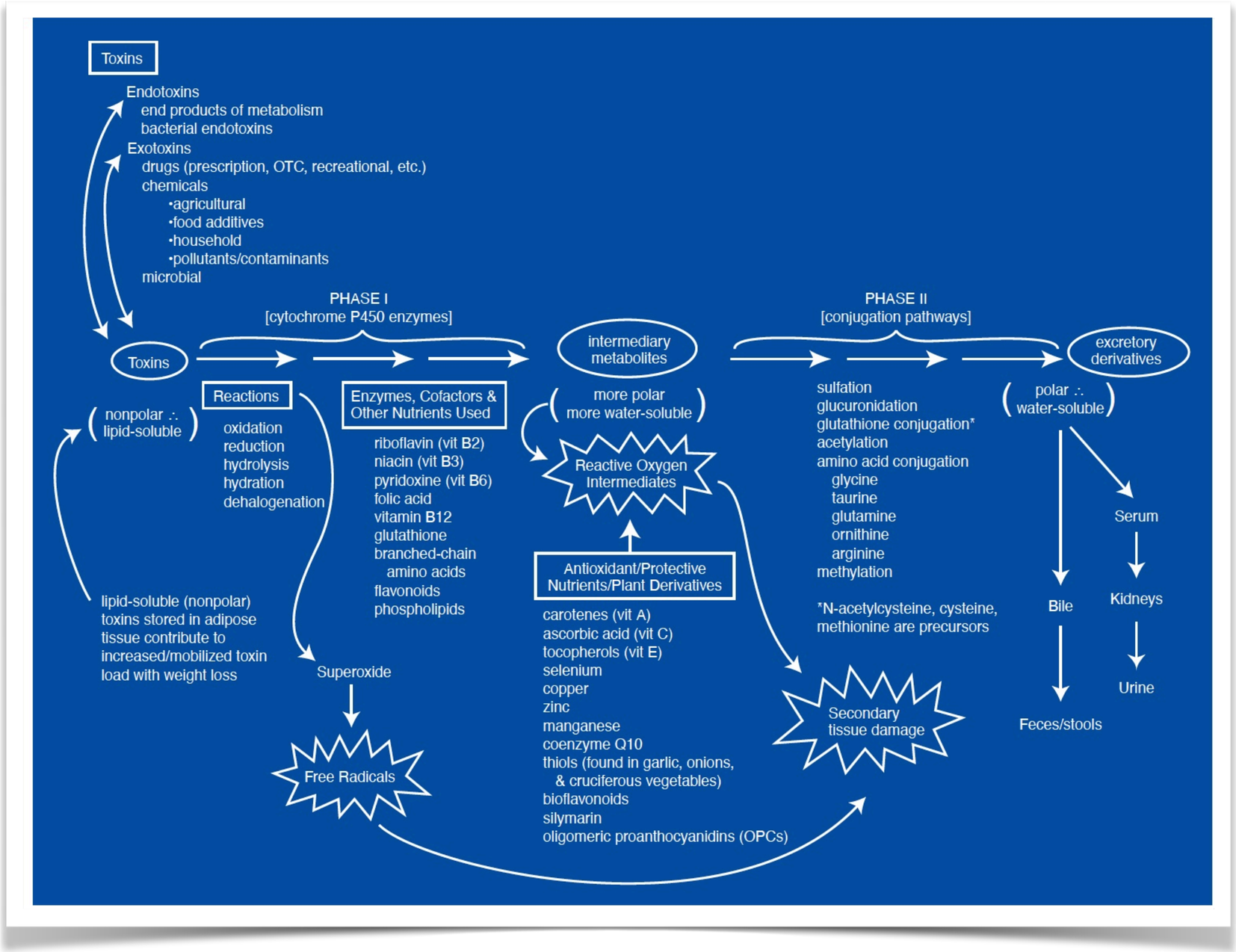


Kohil et al, Front Nutr, 2022

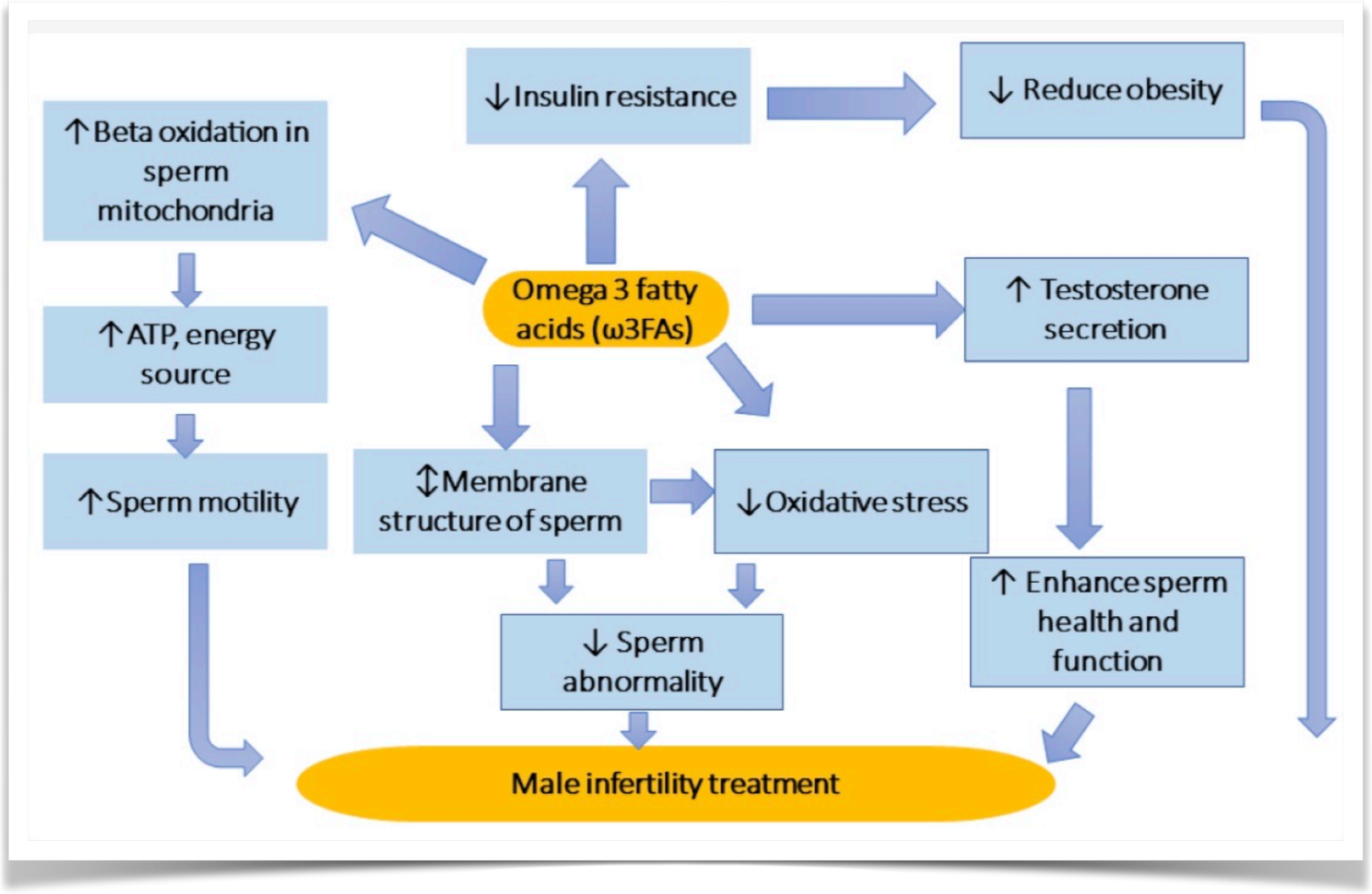


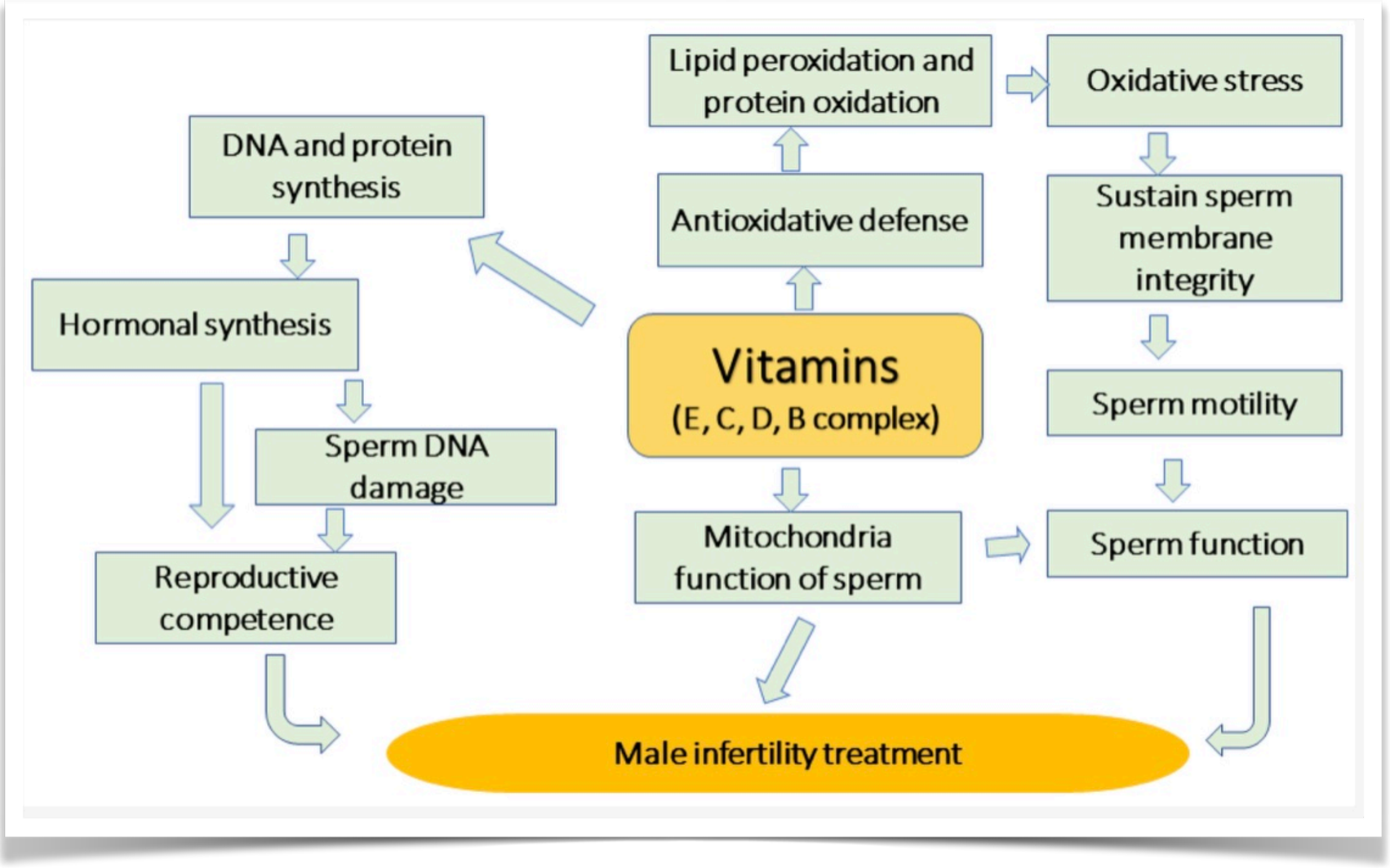
Mischra et al, Front. Nutr. 2023

Cibo, salute riproduttiva e interazioni con l'ambiente



Liska, 1998, Alternative Medicine Review


↓Insulin resistance
↓ Reduce obesity
↑Beta oxidation in sperm mitochondria
Omega 3 fatty acids (ω3FAs)
↑ Testosterone secretion
↑ATP, energy source
↑Sperm motility
↕Membrane structure of sperm
↓Oxidative stress
↑ Enhance sperm health and function
↓ Sperm abnormality
Male infertility treatment



Almujaydil, Life 2023

Take home messages

- La salute riproduttiva va tutelata perchè fa parte della salute complessiva
- I microbiobioti genitali rivestono un ruolo fondamentale nella protezione della salute riproduttiva e nella fertilità
- Microbioti e nutrizione comunicano a due vie
- In prevenzione: il modello mediterraneo vince sempre
- Quando ci sono problemi: magari abbassiamo i CHO rispetto a quanto scritto sui manuali, ma rimaniamo sul modello mediterraneo
- I micronutrienti e le sostanze bioattive del modello mediterraneo sono i nutraceutici chiave per il suo ruolo nella protezione della salute riproduttiva e nella tutela della fertilità
- Alimenti ricchi di sostanze bioattive consentono anche al fegato di proteggere il corpo dagli xenobiotici

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Grazie