

The Synergy of TB4 Fragments 1-4 and 17-23

Focus Area	Thymosin Beta-4 Fragment 1-4 (The Environmental Regulator)	TB-500 Fragment 17-23 (The Vascular & Structural Engine)
Brain Blood Flow & Oxygenation	Regulates capillary branching and stabilizes micro-vascular networks to protect local brain circulation.	Upregulates VEGF (Vascular Endothelial Growth Factor). Targets cerebral hypoperfusion similarly to Hyperbaric Oxygen Therapy (HBOT). Drives new blood vessel growth (angiogenesis) to deliver vital oxygen and blood flow directly into starved brain tissue.
Neuroinflammation & Microglia	Acts as an immunomodulator. Downregulates the NF-κB pathway to stop microglia from producing damaging inflammatory cytokines.	Binds directly to actin (the cell's skeleton). Gives calmed microglia the physical mobility to reshape, migrate, and clear out accumulated cellular debris.
PANS & OCD Flares	Calms the systemic, autoimmune 'false alarm' signaling that triggers acute neuropsychiatric behavioral spikes.	Supports neurite outgrowth (the physical branching of brain cells). Structurally reinforcing these networks stabilizes synaptic communication, reducing baseline biological anxiety.
Joints & Tendons	Quality-control manager. Ensures collagen lays down smoothly and plially, preventing stiff, painful scar tissue.	Physical rebuildler. Forces healthy cells to migrate straight to soft-tissue injuries and rapidly reconstruct damaged ligaments and cartilage.
Gut & Barrier Defense	Manages the extracellular matrix to protect the delicate, tightly knit walls of the intestinal lining.	Acts as the structural sealant. Accelerates endothelial cell migration to physically close a 'leaky gut' and reinforce the blood-brain barrier.

Mechanism of Action

Instead of acting as separate or competing entities, these two fragments collaborate dynamically:

- 1. Fragment 1-4 stabilizes the environment:** It manages the immune system, quietens the inflammatory storm, and ensures that any tissue repair is flexible and scar-free.
- 2. Fragment 17-23 drives physical repair and circulation:** It forces cell movement, builds new physical tissue, and floods oxygen-starved environments (like injured joints or inflamed brain regions) with new blood vessels.

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