

# Targeting Toxicity Through Efferocytosis

## Resolvin E1 as a First-in-Class Treatment for Aplastic Anemia

### Background:

Severe Aplastic Anemia (SAA) is a life-threatening bone marrow failure disorder that requires potent immunosuppression, with cyclosporine A (CsA) as a mainstay therapy. However, the high-doses of CsA required for efficacy in SAA are associated with significant kidney and liver toxicity, chronic inflammation, and incomplete resolution of immune dysfunction—often leading to relapse or secondary complications. While CsA effectively suppresses T cell activation, it does not promote immune resolution or tissue recovery, and its toxicity limits long-term use. Patients are left vulnerable to ongoing marrow suppression, organ damage, and systemic inflammation. Despite its wide use, no existing therapies address the need for safer, more effective modulation of immune-driven bone marrow failure. A solution that complements CsA's immunosuppressive action with targeted resolution of inflammation could significantly improve patient outcomes.

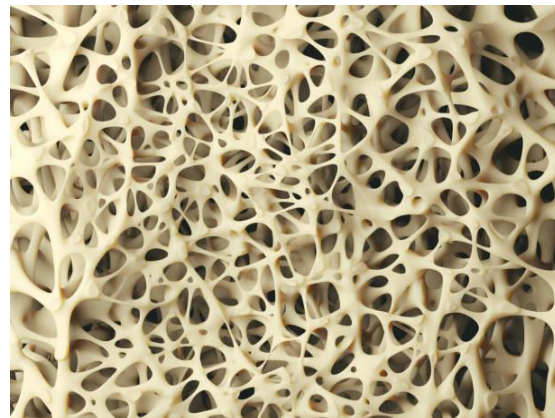


Image of Spongy Bone Structure  
Source: <https://www.istockphoto.com/photo/bone-structure-gm>

### Technology:

Researchers at Albany Medical College have identified Resolvin E1 (RvE1), a specialized pro-resolving lipid mediator, as novel treatment that mitigates CsA-induced toxicity, and improves therapeutic outcomes in a preclinical model of SAA. This technology introduces Resolvin E1 (RvE1), a lipid mediator derived from omega-3 fatty acids, as a novel adjunct to CsA therapy for treating SAA and other immune-driven conditions. RvE1 promotes clearance of apoptotic cells, reduces chronic inflammation, and protects against CsA-induced liver and kidney damage *without* impairing CsA's therapeutic effect. In preclinical models, co-administration of RvE1 with CsA improved survival, restored hematopoietic balance, and normalized immune signaling pathways. RvE1 enables lower doses of CsA to achieve therapeutic efficacy while mitigating its toxicity—offering a dual-action approach that suppresses immune overactivation while restoring tissue homeostasis. This represents a first-in-class strategy to specifically target the core limitations of calcineurin inhibitors. The approach has broad potential for application across autoimmune, transplant, and inflammatory indications.

### Technology Readiness:

Ready for licensing

### Intellectual Property:

PCT-Filed

#### Advantages:

- Enhances CsA efficacy while reducing liver and kidney toxicity
- Promotes immune resolution without broad immunosuppression
- Enables lower-dose CsA with improved survival outcomes

#### Applications:

- Adjunct therapy for Severe Aplastic Anemia (SAA)
- Combination treatment with calcineurin inhibitors (e.g., CsA)
- Organ transplant immunosuppression support

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