

1. Discovered the involvement of the poly(ADP-ribose) synthetase pathway in inflammation and reperfusion injury
2. Discovered the primary role of intracellular acidosis in mucosal barrier dysfunction
3. Invented a novel class of compounds (mercaptoalkylguanidines) that simultaneously scavenge peroxynitrite and selectively inhibit inducible nitric oxide synthase activity
4. Discovered and characterized the first transcriptional enhancer the human inducible nitric oxide synthase gene
5. Discovered the role of nitric oxide and peroxynitrite in mucosal barrier dysfunction
6. Discovered a novel class of soluble nitric oxide donors that selectively ablate pulmonary hypertension in acute respiratory distress syndrome
7. Invented a patented means to tonometrically quantitate mesenteric hypoperfusion in shock
8. Discovered nitric oxide dioxygenase, the bacterial detoxification mechanism against nitrogen-centered free radical attack
9. Discovered the inflammatory properties of flagellin, the first known Toll-Receptor 5 ligand
10. Identified the binding regions of flagellin involved in inflammatory activation of epithelial cells
11. First to invent novel classes of low nanomolar potent poly(ADP-ribose) synthetase inhibitors
12. First to introduce a poly(ADP-ribose) polymerase ("PARP") inhibitor into man
13. Invented the first selective adenosine 1 receptor agonist to be introduced into clinical trials for treatment of glaucoma, with demonstration of clinical efficacy
14. Invented a pegylated human cystathionine beta synthase enzyme for treatment of homozygous homocystinuria
15. Invented the first scalable chemical synthesis of a Resolvin
16. Invented a novel series of anti-inflammatory cannabidiol prodrugs and conjugates
17. Discovered a novel purinergic (inosine-based) anti-inflammatory pathway
18. Invented a novel redox degradation catalyst and nitric oxide donor that selectively modulates pulmonary arterial hypertension
19. Invented the first water-soluble ebselen derivative amenable to parenteral administration
20. Invented a novel series of desoxy-cannabinoid analogues that selectively activate the alpha3-glycine receptor and induce analgesia
21. First to introduce an inosine-based anti-inflammatory agent in man
22. Invented a novel redox degradation catalyst and nitric oxide donor that modulates intraocular pressure
23. First to invent a means to stabilize resolvins at room temperature, thereby opening up the field of resolvins to practical therapeutic implementation
24. Invented the first ultrapotent broad-spectrum nitrosative and oxidative decomposition catalyst
25. Invented a dual action peroxynitrite decomposition catalyst and nitric oxide donor for treatment of pulmonary hypertension and acute chlorine inhalational lung injury
26. First to introduce a therapeutic peroxynitrite decomposition catalyst into man
27. Invented a novel redox degradation catalyst and nitric oxide donor that modulates acute lung injury
28. Invented an ultrapotent and selective pulmonary vasodilator based on activation of the SUR2 subunit of the potassium-ATP channel
29. Invented a thiol-terpene conjugate for treatment of phosgene inhalational lung injury
30. Invented novel synthetic manufacturing processes of tetrahydrocannabinol, tetrahydrocannabivarin, tetrahydrocannabiphoral, cannabiphoral, cannabichromene, cannabigerol, cannabivarin, and cannabichromovarin.
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