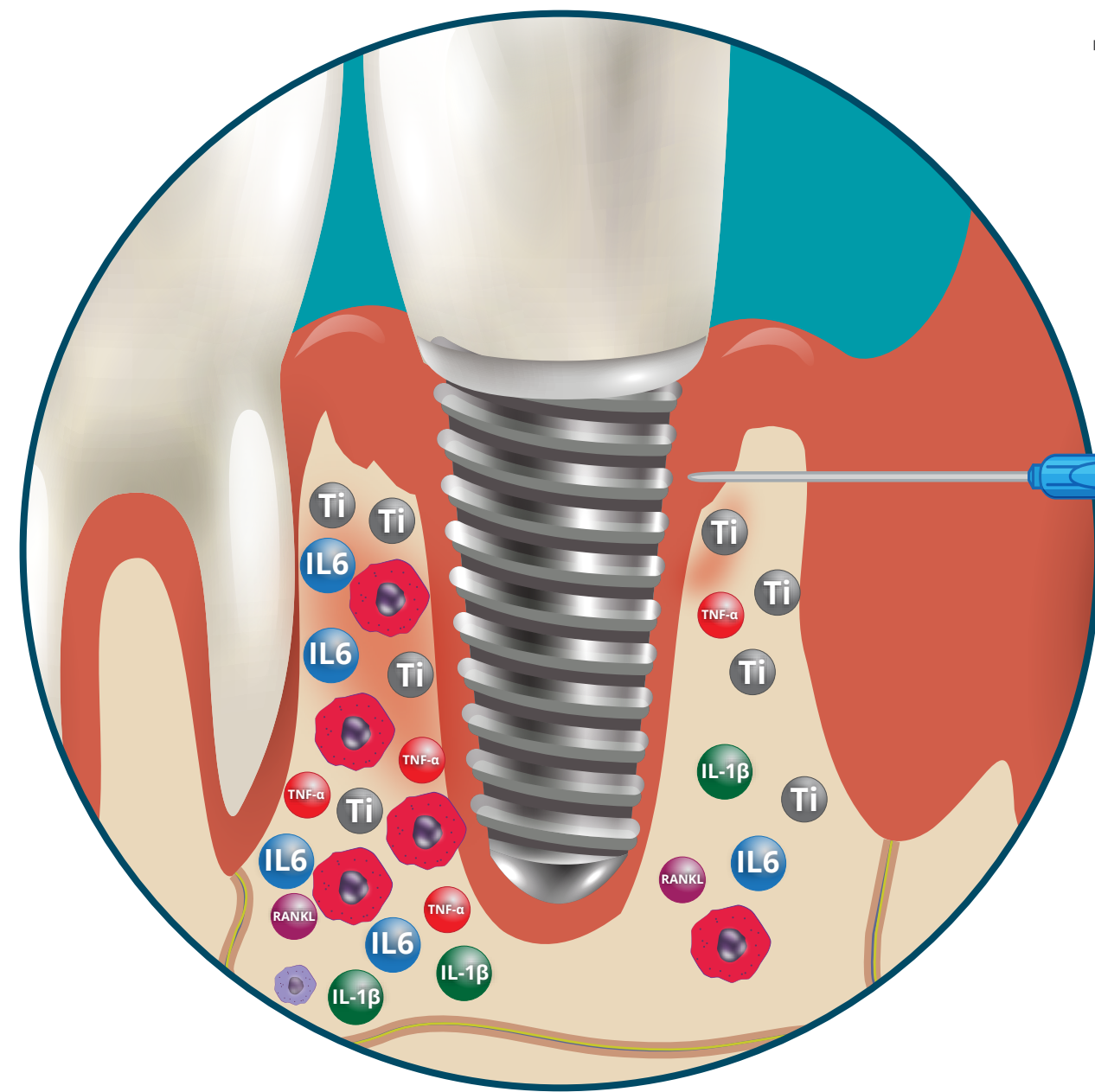
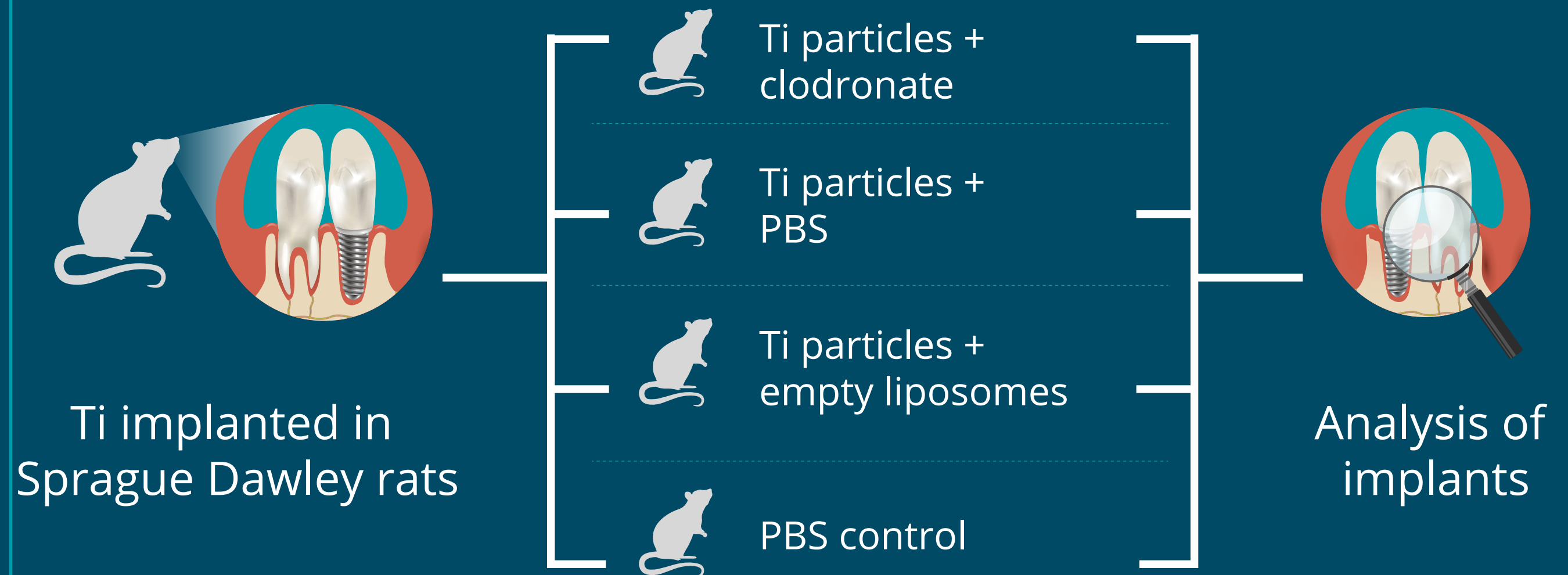


# Do Titanium Particles Cause Bone Loss Around Dental Implants?

Bone loss around dental implants leads to implant failure



Is bone loss triggered by leakage of titanium (Ti) particles from the implant, and if so, what is the mechanism?



Ti increases inflammatory M1 macrophages, pro-inflammatory cytokines, and bone loss

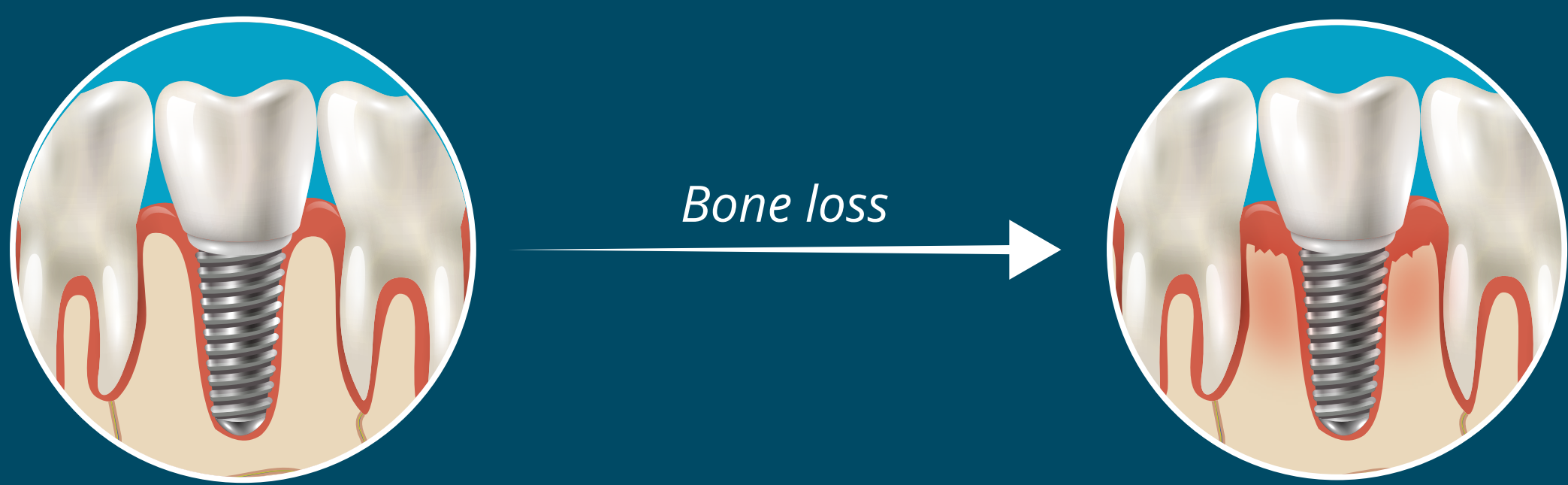
Inflammatory cytokines and bone loss induced by Ti particles were reduced upon depletion of macrophages by clodronate

**Titanium particles** from dental implants **activate macrophages** that cause inflammatory reactions resulting in **bone loss** and **implant failure**

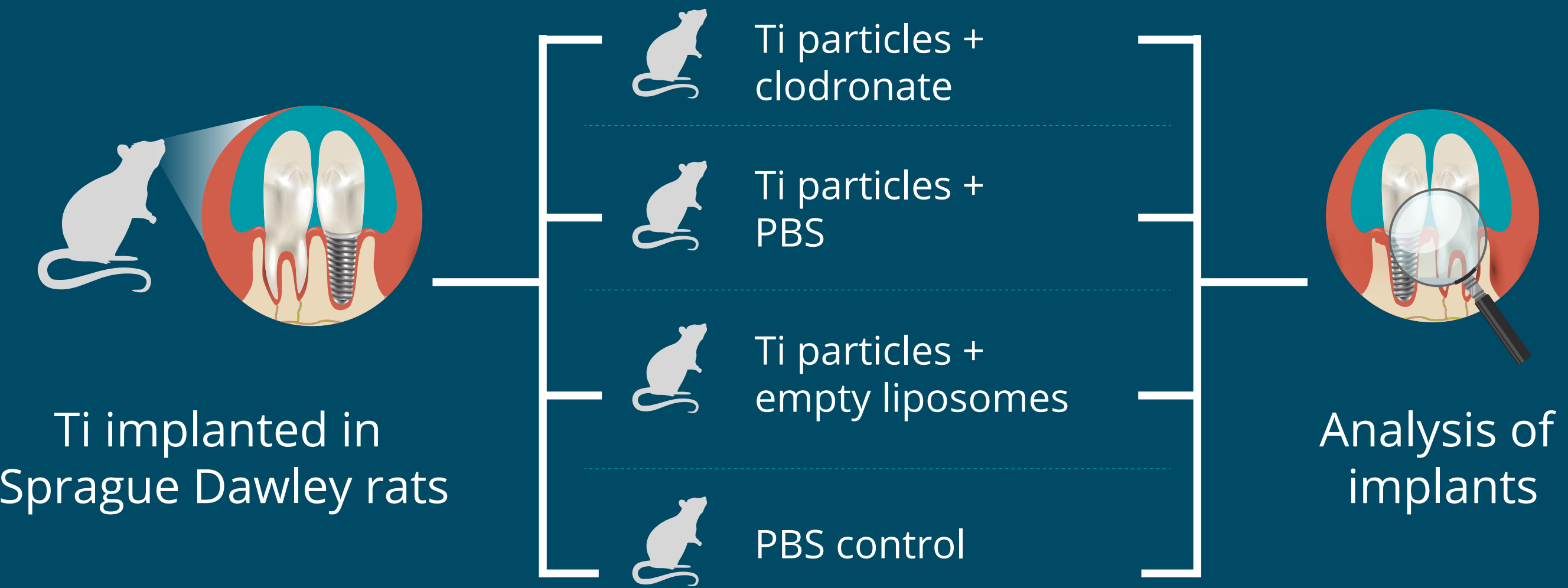


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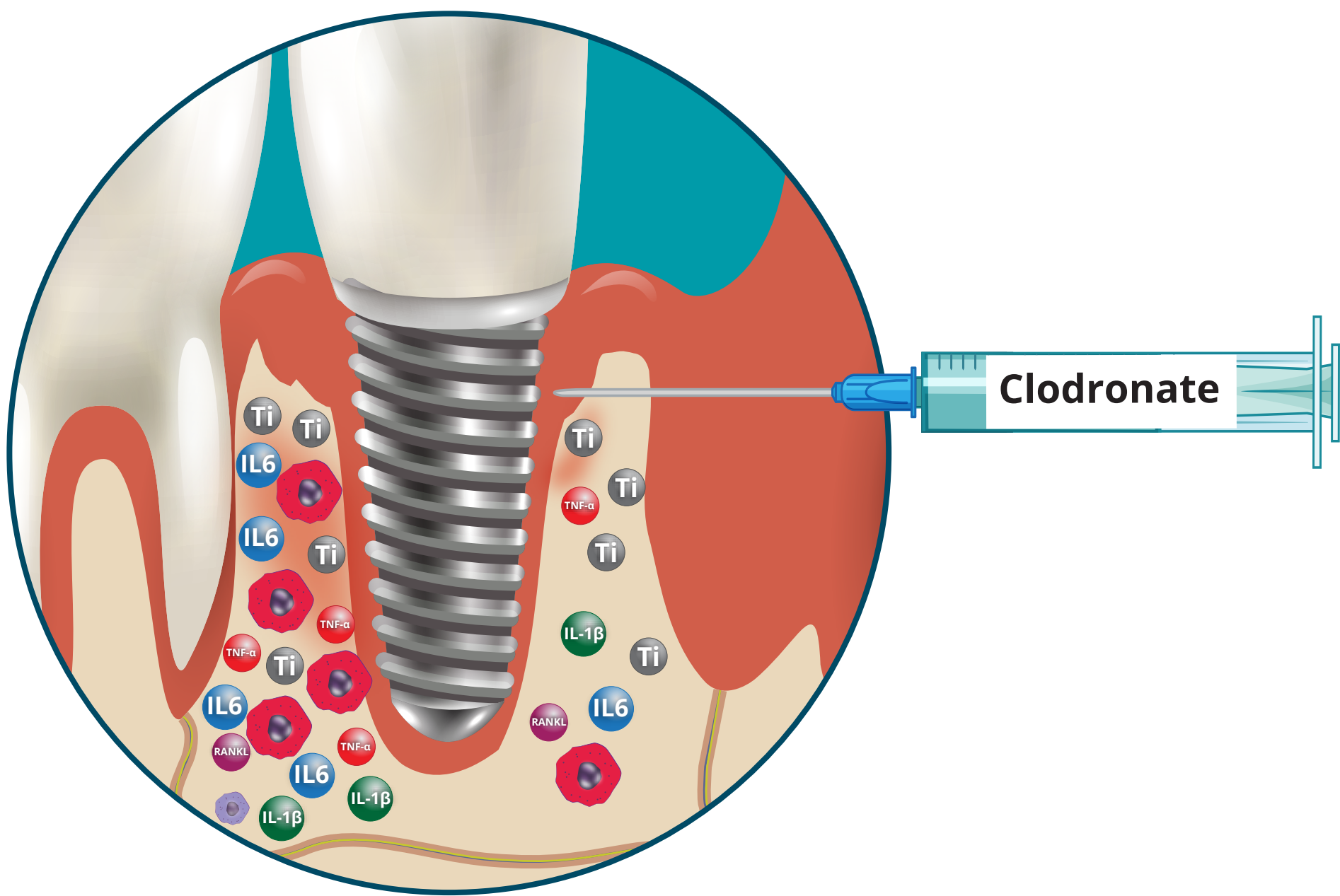
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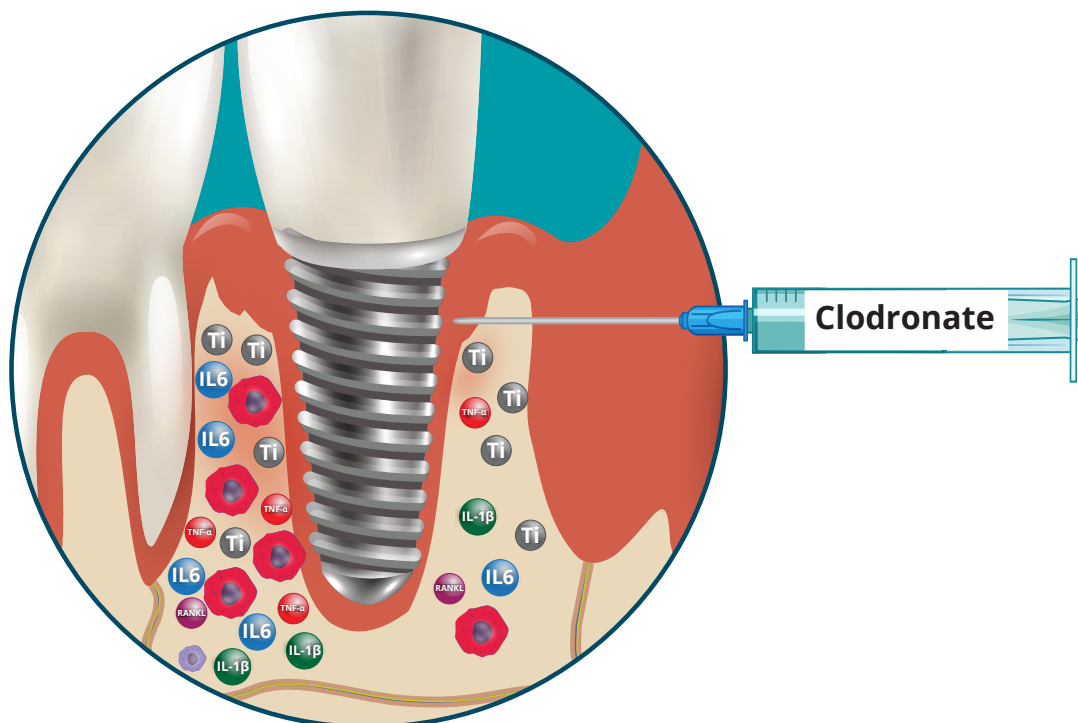


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Ti increases number of inflammatory macrophages



Clodronate reduces production of inflammatory cytokines in bone caused by Ti

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