

WHAT IS CLAIMED IS:

1. A lacrimal insert comprising:
  - a punctal plug having a cavity therein; and
  - a microelectromechanical pump and reservoir positioned within the cavity of the punctal plug, the microelectromechanical pump being configured to deliver at least one therapeutic dosage of an active agent contained in the reservoir into an eye of a patient on demand.
2. The lacrimal insert according to claim 1, wherein the punctal plug comprises a collarette configured to rest on the exterior of a punctum, a bulb that projects into a canaliculus and a body portion connecting the collarette and the bulb, wherein the cavity is formed in at least a portion of the bulb and the body portion.
3. The lacrimal insert according to claim 2, wherein the punctal plug is fabricated from a thermoset elastomer.
4. The lacrimal insert according to claim 3, wherein the thermoset elastomer comprises silicone.
5. The lacrimal insert according to claim 4, wherein the microelectromechanical pump and reservoir comprises a piston assembly including a magnetically actuatable piston configured to deliver a first dose of the at least one active agent upon application of a magnetic field to move the piston from a neutral position to an on position, and a second dose of the at least one active agent upon removal of the magnetic field.
6. The lacrimal insert according to claim 5, wherein the microelectromechanical pump and reservoir further comprise a biasing mechanism for returning the piston from the on position to the neutral position, two channels connecting the reservoir to outlets in the pump, and at least one

valve cooperatively associated with the biasing mechanism to control the flow of the at least one active agent through the two channels.

7. The lacrimal insert according to claim 6, further comprising a vent extending from the reservoir through the bulb of the punctal plug.

8. The lacrimal insert according to claim 7, wherein the microelectromechanical pump and reservoir are fabricated from silicon.

9. The lacrimal insert according to claim 8, wherein the piston assembly further comprises two static poles and one moveable pole, the piston being connected to the moveable pole.

10. The lacrimal insert according to claim 9, wherein the two static poles and one moveable pole comprise a magnetically conductive material.

11. The lacrimal insert according to claim 10, wherein the magnetically conductive material comprises iron and nickel.

## CLAIMS:

1. A lacrimal insert comprising:
  - a punctal plug fabricated from a thermoset elastomer comprising silicone, and having a cavity therein; and
  - a microelectromechanical pump and reservoir positioned within the cavity of the punctal plug, the microelectromechanical pump being configured to deliver at least one therapeutic dosage of an active agent contained in the reservoir into an eye of a patient on demand, wherein the punctal plug comprises a collarette configured to rest on the exterior of a punctum, a bulb that projects into a canaliculus and a body portion connecting the collarette and the bulb, wherein the cavity is formed in at least a portion of the bulb and the body portion and wherein the microelectromechanical pump and reservoir comprises a piston assembly including a magnetically actuatable piston configured to deliver a first dose of the at least one active agent upon application of a magnetic field to move the piston from a neutral position to an on position, and a second dose of the at least one active agent upon removal of the magnetic field.
2. The lacrimal insert according to claim 1, wherein the microelectromechanical pump and reservoir further comprise a biasing mechanism for returning the piston from the on position to the neutral position, two channels connecting the reservoir to outlets in the pump, and at least one valve cooperatively associated with the biasing mechanism to control the flow of the at least one active agent through the two channels.
3. The lacrimal insert according to claim 2, further comprising a vent extending from the reservoir through the bulb of the punctal plug.
4. The lacrimal insert according to claim 3, wherein the microelectromechanical pump and reservoir are fabricated from silicon.
5. The lacrimal insert according to claim 4, wherein the piston assembly further comprises two static poles and one moveable pole, the piston being connected to the moveable pole.

6. The lacrimal insert according to claim 5, wherein the two static poles and one moveable pole comprise a magnetically conductive material.

7. The lacrimal insert according to claim 6, wherein the magnetically conductive material comprises iron and nickel.