In Lovell Abraham’s first biomedical engineering class, BME professor and chair Henry Donahue, Ph.D., encouraged students to get involved in research. Abraham didn’t hesitate and began working in Donahue’s lab, winning awards for his contributions to a NASA-funded project studying the effect of microgravity on bone fracture healing.

“Insights into disuse-induced bone loss will possibly lead to new therapeutics for age-related bone loss,” Donahue said.

Abraham is looking at a particular cell mechanism called gap junctional communication, where cells talk to one another. He’s asking whether inhibiting these gap junctions actually protects against disuse-induced bone loss.

Postdoctoral research fellow Evan Buettmann, Ph.D., is leading Abraham in a project looking at how bone fractures heal after the bone has been exposed to disuse.
Students create prototype of a childproof handgun safety mechanism

From 2015 to 2020, there were at least 2,070 unintentional shootings by children, according to Everytown for Gun Safety. These incidents motivated Capstone team BME106 to choose a senior Capstone Design project related to gun injuries.

BME106 set out to find an engineering solution for two handgun problems: provide ready access to an adult while also preventing a young child from firing it.

Zore X Core is the product BME106 developed, a gun lock with a mechanism that blocks the firing pin from meeting the ammunition and prevents the slide from fully closing. It allows for the lock to stay attached to the firearm and transition automatically to remove the firing pin block.

To prevent children younger than 10 years of age from unlocking the device, the team intends to use mechanical switches or pressure sensors that react only to an adequate amount of force – an amount of force larger than a young child could muster.

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