Mig-6 Knockout Mouse Model
A genetic mouse model for the study of osteoarthritis and osteoarthritic therapies.

Background
Osteoarthritis (OA) is a common degenerative joint disease, particularly affecting large weight-bearing joints such as knees and hips. In the U.S., the incidence of hand OA is between 2 percent and 4 percent while knee OA is between 0.16 percent and 0.24 percent. The frequency of OA rises from 1 percent in people younger than 30 years old to nearly 10 percent for those older than 40. There are treatments available to alleviate some of the swelling and pain associated with OA; however, none of the current therapies completely stop or reverse disease progression.

Technology
While the underlying mechanisms of OA are not thoroughly understood, previous studies showed the disruption of mitogen-inducible gene-6 (Mig-6) in mice leads to early onset of OA. Scientists at Van Andel Research Institute (VARI) generated Mig-6 knockout mice to observe the progression of OA-like symptoms with increased joint inflammation and deformity. This Mig-6 mutant mouse strain can serve as a useful animal model for osteoarthritic research and for the assessment of OA therapeutics.

Figure 1: Joint deformities in Mig-6 (-/-) mice. Comparison of knee joints between wild type (left; Mig-6 (+/+)) and Mig-6 knockout (right; mutant Mig-6 (-/-)) mice. Progressive enlargement and deformity of multiple joints in the Mig-6 (-/-) mice were observed, especially in the knees, ankles, and temporal-mandibular joints.

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