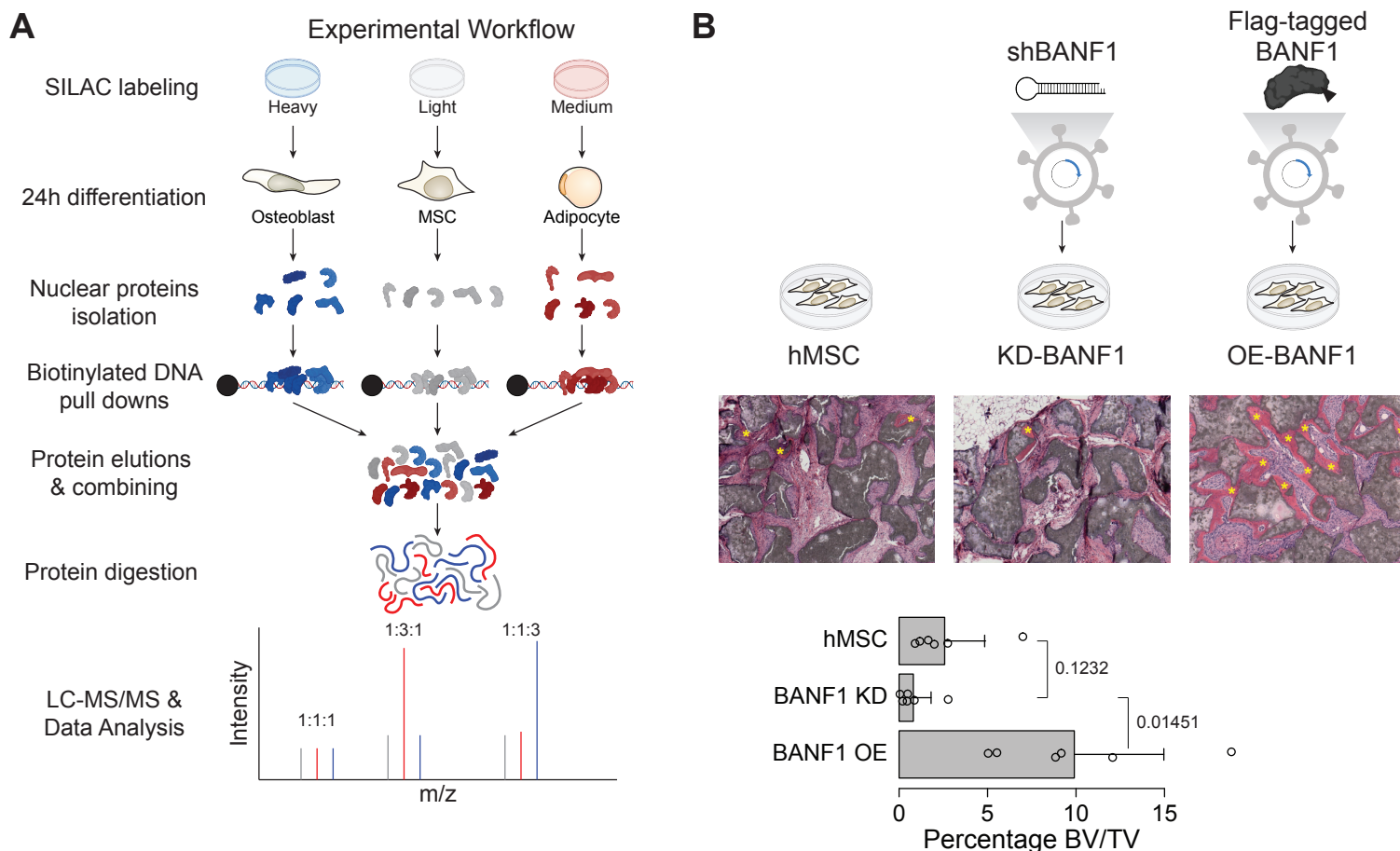


Bachelor or Master's project in Biomedicine, Biochemistry or Medicine: Defining the *in vivo* effect of the novel transcription factor BANF1 on bone health

Background & Key finding

Using a proteomics-based DNA pull-down approach (*Fig. A*), we identified **BANF1** as a factor that binds regulatory elements of osteoblast-specific genes during early differentiation.

Functional experiments showed that changing BANF1 levels directly alters osteogenic potential: human cells with reduced BANF1 form less bone, while cells with increased BANF1 levels show enhanced bone formation when transplanted into immunodeficient mice (*Fig. B*).



Project aim

To determine whether BANF1 controls osteoblast function in a **cell-autonomous manner** *in vivo*, using osteoblast-specific knockout mice.

Approach

- Characterize osteoblast-specific knockout mice
- Analyze bone structure and formation
- Study isolated osteoblasts in culture

What you will learn

- Bone biology & osteoblast differentiation
- Mouse models & phenotyping
- Cell culture & functional assays
- Translational research linking cells to organism

Why this matters

Understanding how BANF1 controls bone formation could open new avenues for treating **osteoporosis and impaired bone healing**, as reduced BANF1 is linked to aging and bone loss