



DECIPHERING DNA

BY JO ANN LLOYD

THE BODY PARTS ARRIVE at the lab innocuously enough, carefully packed inside a special white box: bones, teeth, hair, brain tissue – human remains to be analyzed for DNA that could yield clues to a person's identity.

It's definitely not a job for the faint at heart, but alumna **Michelle Halsing (BIO '01)** is well suited to the demands of the job.

One of five senior criminalists at the California Department of Justice's Missing Person's DNA lab in Point Richmond, Halsing has worked on about 100 cases during her first year on the job. "Of those 100, I've been able to identify 16. It's sad we can't solve a higher percentage, but those 16 are worth all of the work."

The arduous three-day identification process requires patience and a highly scientific background. Once she receives a case from an outside agency, Halsing will sample everything, depending on its condition. "We look for the least damaged area of the bone and try to get DNA from there," she explained. "Some remains have been out in the desert for 30 years or more or have been partially eaten by animals, so sampling the right area of the bone can be challenging."

Using a basic tool much like a small sanding wheel, Halsing rids the specimen of dirt and other debris that can inhibit the process. "The sample is submerged into liquid nitrogen for approximately 10 minutes, and a machine pulverizes the bone or specimen into dust," she said. "Chemicals are then added to the dust or specimen which releases the DNA."

Finally, the DNA is washed and purified. Millions of DNA copies are made with a process called PCR that acts like a mo-

lecular Xerox machine. Once the copies are made, they are put onto another instrument and analyzed to reveal a person's DNA profile.

But positive identification isn't a given. The DNA lab has two databases. One database receives the DNA information gleaned from the analyzed remains. The other database holds DNA information sent to the lab from family members or loved ones of missing persons. "We get transients and homeless people from all over the country," Halsing said. "If no one is looking for them, and we don't have any DNA information in our database, they will likely remain Jane or John Doe forever. Definitely, the hardest part of my job is that I am not going to be able to identify every set of remains."

Halsing's job might provide enough drama for most couples, but not for her and her husband, Eric, who works for the Department of Justice also as a senior criminalist but for the criminal casework program.

Who has the tougher job? "My husband," insisted Michelle. "Most of his victims are living and their perpetrators still at large."

The couple, who live in Novato, have one son who turns 2 in September and another baby due in January. Because of their professions, the Halsings admit to being a bit more protective than your average parents. "The kids probably won't like us for that – especially when they are in high school." □

