Leeches and Science

At first mention of the word leech, most thoughts turn to the medicinal leech, *Hirudo medicinalis*, and the practice of bloodletting. In past centuries, various illnesses have been attributed to "bad blood," and bloodletting was common. Medicinal leeches were used in bloodletting because when they feed, they ingest seven to eight times their weight in blood—one of the biggest meals in the animal kingdom. After such a meal, the leech may not feed again for a year.

The writings of Galen, an early Greek physician, document the use of leeches in bloodletting during the second century. The practice was common through the early nineteenth century. The medicinal leech and medicine became almost synonymous. Physicians themselves were sometimes (respectfully) referred to as "leeches." During the late nineteenth and early twentieth century, the use of leeches in medicine declined. Now, however, the medicinal leech is again being used in medicine to remove excess blood from tissues after plastic surgery or after reattachment of amputated appendages. If the excess blood is not removed, blood accumulating in tissues of postoperative patients often slows the regrowth of capillary beds and can cause tissues to die.

Researchers are also using leeches to investigate the physiology of nervous systems. Leeches are good research subjects because their nervous system is simpler than that of many other animals that show system-level organization, and because the nerve cells of all animals share similar physiological properties. Leech nerve cells secrete certain chemicals, such as serotonin, that help regulate all aspects of leech feeding—from finding prey to ingesting blood. Organisms such as leeches may hold the keys to discovering the roles of essentially identical chemicals in the nervous systems of other animals.