Question:

What is a transducer? How does it function? Give an example of a biological one.

Response:

Transducer: “A device that is actuated by power from one system and supplies power usually in another form to another system.”

Transduction works in a way where a signal is sent to a receptor. The receptor then amplifies the signal and sends it to another system where it creates a response. An example of this is estrogen acting as the signal. There are many estrogen receptors that can send out signals to secondary messengers to employ systems important to reproduction. For example, estrogen can bind to a receptor on the cell membrane and recruit second messengers like Nitric Oxide, Receptor Tyrosine Kinases, and G-protein-Coupled Receptors, and protein kinases.

References:

<http://www.merriam-webster.com/dictionary/transducer>

<http://www.sabiosciences.com/pathway.php?sn=Estrogen_Pathway>