

Having defined, or looked at some of these small molecules, now we're going to ask, how do they modulate the proteins to which they bind? The first answer of course is that they do associate with the protein. They bind to the protein. The answer to my question, fundamentally is going to be... the message that I want you to receive, is that upon binding, these small molecules create a complex with a protein, and we should think about this complex as a completely new entity. A new entity that can be either inactive, or overactive. Can we roll the next animation? What you're seeing here is the cellular protein calmodulin, in blue. It plays a key role in a number of cellular functions. It does so by using a cleft that you can see. The cleft has now been occupied by the gold, small molecule. And so in the process we have a small molecule protein complex, you notice it has a very different shape, it is in fact in this case, inactive because that cleft is no longer available for its normal, cellular function.