# Discussion

### Michael Connolly

**Q:** What kinds of applications will be assumed for DNA-templated field effect transistor (FET)?
**A:** One example is sensors for detecting specific DNA sequences in the field of biodefense.

**Q:** How do you extract target DNA?
**A:** In the case of spores, we need to ultrasonicate to physically open the spores to get DNA inside. In the case of viruses, we just need to dissolve them.

**Q:** How is the specificity of FET?
**A:** It depends on systems and on various conditions such as buffer contents, and we should improve this to reduce the background as much as possible and raise the signal to noise ratio.

**Q:** Is it possible to detect mutated bacteria or their inactive forms?
**A:** Probably possible, but it depends.

**Q:** How high is the risk for contamination?
**A:** Almost nothing, because the chip is just like a credit card and disposable.

### Jennifer W. Sekowski

**Q:** Is the response against sarin the same as to cyclosarin?
**A:** Yes, it is.

**Q:** What kind of symptoms are shown in those who went to the Gulf War?
**A:** They feel stressed and show some responses in the skin.

**Q:** Are the data obtained in experimental animals such as pigs thought to be relevant to those in humans?
**A:** This is the best that we can do at the moment.

**Q:** What kinds of toxic materials are problems in industry?
**A:** One example is the agent for dry cleaning, which is very toxic for people.

**Q:** Are the responses to toxic agents different between genders?
**A:** This is an interesting question, but at the moment, we cannot say anything from our data since they are too preliminary.

### Suehiro Sakaguchi

**Q:** Compared with mad cow disease, is it rare for people to be infected with prion?
**A:** It probably is, since sensitivity for infection in human beings may be lower.

**Q:** Why should we worry about BSE given the small number of patients?
**A:** Even if the number of the patients is small, we should consider it seriously since having any number of patients is a cause for concern.

**Q:** What is the origin of mad cow disease?
**A:** Bones of scrapy sheep were fed to cows, and the bones of those infected cows were fed to other cows. Prion disease in cows is thought to spread in this way.

**Q:** Is there a vaccination against bovine prion protein infection?
**A:** We have made vaccines against bovine prion protein, and we believe it works.

**Q:** Are there any risks for autoimmune diseases from vaccination against prion protein?
**A:** At least vaccinated mice exhibit no abnormalities.

**Q:** What is the function of prion proteins in normal cells?
**A:** From studies of prion protein-injected mice it seems that prion proteins maintain neurons.

**Q:** How many prion protein molecules are required for onset of the disease?
**A:** I am not sure, but one is not enough, and probably several are needed.

**Q:** How small of an amount of prion protein can be measured?
**A:** A certain period may be required to get prion protein accumulated to the detection level.

**Q:** Why are prion proteins resistant to heat?
**A:** Abnormal prion protein molecules are aggregated so that the molecules inside remain stable even though the outside molecules degenerate.

**Naomi Hachiya**

**Q:** Is there any evidence that aggregation of mutated prion protein molecules are helpful in the body? Or, is it only toxic?
**A:** Some aggregates seem to take up some toxic materials within the cell to prevent their spread, but in case of the mutated prion protein, it is not known, or useless.

**Q:** Are there any good ways to prevent excitation and aggression due to prion diseases?
**A:** Unfortunately, symptomatic treatment is the only way.

**Q:** Are there any enzymes that can degrade aggregated prion proteins?
**A:** No, there aren't.

**Q:** Would it be possible to use oligomeric Aip2p to unfold aggregates of the meat when sprinkled?
**A:** Probably yes, if it is used in the right way.

**Q:** Can oligomeric Aip2p (unfolding) be used for other protein aggregation diseases than prion disease?
**A:** Yes, since unfolding has no substrate specificity.