

**P041** What is the role of RNA in the synaptonemal complex?  
**Hugh Fletcher**

*Queen's University, Belfast, School of Biological Sciences*

The cytological appearance of RNA as a major component in the synaptonemal complex (SC) has been known for over 30 years, but has received no comments because there were no techniques to examine it and no idea what it did. Roles for RNA in chromatin modification and heterochromatinisation are now known, and techniques are available to investigate RNA in the SC.

If the SC-RNA is all similar in length, it should be detectable as a band by electrophoresis from purified SC. If it is structural and all the same sequence then there must be genes for it. If it is all locally synthesised then molecules will have unique sequences, which suggests a possible role in homologous pairing.

A chromosome core with a bottle-brush of extended single strand RNA able to pair with complementary sequences from the homologous chromosome would dramatically increase the rate of partner-identification relative to a continuous DNA double helix with few or no extended free single strand ends, especially in a large genome. The interaction could be RNA/RNA or RNA/DNA. The RNA could be made during DNA replication, which might explain the fact that meiotic DNA replication takes 20-30 times longer than mitotic replication. RNA primers on the lagging strand would provide specificity.