One of the goals of the graduate Program in Molecular Biology from UNIFESP (PrMB-UNIFESP) is to contribute for continuing education of biology teachers from public high schools. A close relation between university and public schools is an important channel for dissemination of scientific knowledge. Thus, a 40h Molecular Biology updating course was offered to 20 high school teachers. The objective was to discuss genomic and proteomic advances and their application. The course was organized by graduate students from PrMB-UNIFESP. Three groups of students were formed, two being responsible for theoretical and practical classes and one for global logistic including searching for financial support. The themes presented to the teachers were flow of genetic information, recombinant DNA, gene cloning, transgenic plants and animals, mutation, super bacteria and stem cell. The teachers also had hands-on classes including DNA extraction, PCR, gene cloning and SDS-PAGE. The teachers received an assignment to go back to their schools and do some activity with their students that would be related to the themes discussed. The students produced videos, discussions, posters, theater, experimental models and practical classes related to the course themes. After 3 months the teachers returned to show their students' work. We conclude that information was transmitted to the teachers, updating them, and to high school students, that learned science in an entertaining way. Also, the graduate students had an experience on how to organize a course including all its responsibilities. Supported by: CAPES, CNPq, FAPESP, FINEP, Proex Unifesp.