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# This Week's Citation Classic®

**Brun R & Schonenberger M.** Cultivation and in vitro cloning of procyclic culture forms of *Trypanosoma brucei* in a semi-defined medium. *Acta Trop.* 36:289-92, 1979.
[Swiss Tropical Institute. Basel. Switzerland]

A simple culture medium was developed for high yield production of the insect stage of African trypanosomes and *Leishmania* species. In addition, a method was described for the in vitro cloning of such parasites. [The *SCI*® indicates that this paper has been cited in more than 145 publications.]

## Cultivation of Human Pathogenic Blood Protozoa

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**In 1975,1 was a postdoctoral fellow at the University of California at Irvine, working on the cell biology of *Leishmania,* an important protozoan parasite of humans. Together with Randolph Berens and Stuart Krassner, I developed a culture medium for growing these pathogens. At the same time, in Basel, Switzerland, Leo Jenni was trying to grow African trypanosomes in a new synthetic medium developed by British scientists. When he visited me at Irvine, we decided to attempt to grow trypanosomes in the *Leishmania* medium and in a mixture of our two media. I have vivid memories of that Monday morning when we examined our cultures. The liquid in the flask containing the mixture of the two media was cloudy, and we were both convinced that the culture was contaminated by unwanted microorganisms. To our surprise, microscopic examination disproved this. Instead of bacteria or yeasts, we saw nothing but beautifully growing trypanosomes! After my return to the Swiss Tropical Institute in Basel, we started to analyze the two media to find out what components of each medium were essential. After a few months, we came up with a formulation that we called SDM-77 (semi-defined medium published in 1977).[1] The otherwise fully defined medium had to be supplemented with a small portion of fetal bovine serum. We used this medium for various studies, and other laboratories did so as well. With the help of my collaborator, Margrit Schonenberger, SDM-77 was improved several times during the following two years. We even succeeded in cloning trypanosome populations in the latest version, which we called SDM-79.**

**Since then, we have used this culture technique for many of our own projects. And, in the hands of other research groups, SDM-79 has proved to be an ideal artificial medium to grow insect forms of these parasites. At about the time that we developed our medium, Isabel Cunningham was also developing a culture medium, which differs in its composition from ours but gives similar results.[2] Mixing media is still in fashion in our laboratory: a mixture of Cunningham's medium with SDM-79 is our standard medium for growing fresh isolates of *Leishmania* from patients. Schonenberger left science 10 years ago and started to make pottery. Today she enjoys a happy family life and her children.**

**There has been significant progress in the cultivation of the various stages of trypanosomes during the last 10 years.[3,4] The cultivation of the insect stage of trypanosomes has perhaps become less important since it has been possible to grow the mammalian stages in a simple axenic culture medium.[5] However, this culture medium has the major disadvantage that only low parasite densities can be obtained. For numerous studies, this is not a limitation, e.g., for testing drug resistance or the effect of new compounds, or for serological investigations. However, whenever large quantities of parasites are needed, SDM-79 is still what biochemists and molecular biologists are looking for, and there are obviously many of them.**

1. **Brun R & Jenni L.** A new semi-defined medium for *Trypanosoma brucei* sspp. *Acta Trop.* 34:21-33, 1977.
2. **Cunningham I.** New culture medium for maintenance of tsetse tissue and growth of trypanosomatids. *J. Prolozool.* 24:325-9, 1977. (Cited 115 times.)
3. **Brun R & Jenni L.** Cultivation of African and South American trypanosomes of medical or veterinary importance. *Brit. Med Bull.* 41:122-9, 1985.
4. **Gray M A, Hirumi H & Gardiner P R.** Salivarian trypanosomes: insect forms. (Taylor A E R & Baker J R. eds.) ***In vitro methods for parasite cultivation.*** **London: Academic Press, 1987. p. 118-52.**
5. **Baltz T, Baltz D, Giroud C & Crockett J.** Cultivation in a semi-defined medium of animal infective forms of *Trypanosoma brucei. T. equiperdum. T. e\ansi. T. rhodesiense* **and** ***T. gambiense. EMBO J.*** **4:1273-7, 1985.**

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