

THE *Be*TER LeTTER

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BTER Foundation Now Accepting Members

The BTER Foundation has amended its Articles of Incorporation and its bylaws to accept members.

"Members will play an active role in developing the future programs and services offered by the Foundation" commented the Director, Ronald Sherman. "The Board of Directors can no longer provide all of the educational and patient support activities that the community is requesting. The Foundation's programs have developed quickly over the past 2

years, and the expectations have grown accordingly."

The initial membership will be limited to approximately 100 individuals invited to take an active role in helping the Foundation serve the needs of biotherapy patients, clinicians, and the general public. These "Founding Members" will guide the Board in establishing criteria for future membership, and serve as faculty, grant reviewers, and Board advisors. Founding Members will have the

opportunity to serve on a variety of sub-committees, grant review panels, and Board advisory posts.

About 50 invitations have already been sent out;

another 50 will be mailed over the next few weeks. Be sure to contact the Foundation office if you have not received an invitation and believe you should have.



BTER Foundation Exhibit Table for the Annual Meeting of the Wound Healing Society, May 14-17, 2006.

Maggot Therapy in the Rijnland Hospital Leiderdorp

By Pascal Steenvoorde and Jacques Oskam, The Netherlands

Maggot debridement therapy (MDT) was introduced to the Rijnland Hospital Leiderdorp, The Netherlands, in Summer, 2002. Our first MDT patient suffered from a severely infected below-knee amputation (BKA) wound, which, in our opinion, needed to be converted to an above-knee amputation (AKA). The patient refused, however, and urged us to try maggot debridement therapy. After witnessing the impressive results (see Figure 1 on

page 3), we became enthusiastic users of this therapy. The larvae have helped us treat problematic wounds in many patients.

Maggot debridement therapy was first introduced in The Netherlands in 1999 at the Leiden University Medical Center. Still, by 2002, when we began using MDT at the Rijnland Hospital Leiderdorp, it was difficult to obtain disinfected maggots.

Initially, maggots were delivered by Dr. Jukema from the Leiden University Medical Center.

Now, medical-grade maggots are available commercially (BiologiQ, Amersfoort, The Netherlands) and over 50 hospitals in The Netherlands use maggot therapy, although only a few have treated more than 10 patients.

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Foundation Announcements

BTER Foundation opens to membership—

The BTER Foundation is now able to accept members. The first 100 "Founding Members" will help set the paths and policies for the future of the organization, including future membership criteria, grant reviewing, and faculty selection. More information can be found on page 1.

Maggot Therapy Workshops — The MDT workshops are gaining in popularity, and the

Foundation has been invited to several cities to teach clinicians how to use maggot therapy safely and effectively on their wound care patients. Most recently, the Foundation co-sponsored a workshop in Riverside, CA, along with the University of California, Riverside, Extension, and the Riverside County Medical Association. That hands-on course attracted clinicians from the local community, as well as from elsewhere in the US, Canada and Japan.

The Foundation staff is preparing to present a brief version of the Maggot Therapy Workshop at the 16th Annual Meeting of the Wound Healing Society. Scheduled for May 14-17 in Scottsdale, AZ, an estimated 300 attendees will participate in this conference, including the "Hands-On Course."

If you would like to co-sponsor a Maggot Therapy Workshop in your city, contact the BTER Foundation, or find out more on the internet at www.bterfoundation.org.

eBay auctions benefit the BTER Foundation —

Check out the BTER Foundation E-bay charity store, where all sales & profits are applied to the BTER Foundation programs. Or, donate a portion of *your* E-bay sales to the Foundation, and advertise your generosity along with your sales items. What a great way to clean up clutter and get rid of those unused items that have been taking up space; and, at the same time, help us to continue helping others. Find out more at: www.missionfish.org/ForSellers/forsellers.jsp.

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36 Urey Court, Irvine, CA 92617

Phone: 949-509-0989 / Fax: 949-509-7040

editor@BTERFoundation.org

www.BTERFoundation.org

Editor:

Ronald A. Sherman

Assistant Editor:

Christina Hur

Contributing Writers:

Sagiv Ben-Yakir, Jose Contreras-Ruiz, Robert McKie, Jacques Oskam, Pascal Steenvoorde, Catalina Wang

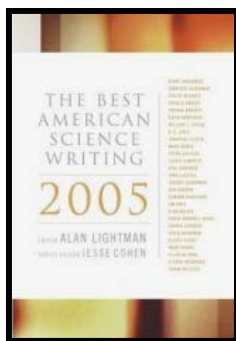
Foundation Consultants:

E. Iversen, J. Preston, Alison Shorger

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Biotherapy in the News



The Best American Science Writing of 2005 (by Alan Lightman and Jesse Cohen) features Ben Harder's article about MDT, biotherapy, and the BTER Foundation. Harder's article, "Creepy-Crawly Care,"

first appeared in *Science News*, 10/23/04. For more information about this and other articles featured in the anthology, visit: www.BTERFoundation.org/indexfiles/books.htm from which you can link to your favorite bookseller.



Maggot Therapy in The Netherlands

Story continues from page 1

In our facility, all maggot dressings are applied and managed in the outpatient department, even for in-patients. As previously noted in the medical literature, the "yuck factor" was more of a problem with some of the medical staff than with the patients. Treating all of our MDT patients in a dedicated Maggot Therapy Clinic, staffed by two resident surgeons, one vascular surgeon, two nurses, and a physician's assistant, provides patients with high quality care by trained staff and avoids potential complaints and catastrophes that might otherwise result from allowing untrained and rotating staff to deliver this simple but unconventional treatment.

Maggot therapy patients are generally scheduled to be seen in the outpatient clinic on Tuesday and Friday afternoons. With as little as 24 hours

notice, medicinal maggots can be ordered and scheduled to arrive in the morning of the day they are to be applied. Approximately 5 to 8 MDT patients are then seen that afternoon.

Between August 2002 and December 2004, we treated 64 patients (69 wounds) with maggot therapy. Of these, 25 patients (39%) were in-patients. Of the 69 wounds, 50 had successful outcomes, either having healed completely (41) or nearly completely (9) at the time of their last follow-up visit. These results are even more remarkable in light of the fact that most of these patients were very ill. Thirty-nine patients (61%) were classified as ASA (American Society of Anesthesiologists) Class III and IV: patients with the highest surgical risks. Eleven of the patients died of unrelated causes within 2 years. Given the high rates of

successful debridement (wound cleaning) and wound healing in these very ill patients, some of whom were not even eligible for surgical care, maggot therapy is playing an important role in treating infected wounds.

In our clinic, we use both free-range maggots (which contact the wound bed directly) and self-contained maggot dressings (a nylon and/or polyvinyl alcohol (PVA) pouch which completely surrounds the maggots (produced by BioMonde; distributed by BiologiQ).

Our standard application technique is to use the free-range maggot dressings. The free-range technique is more effective, and the potentially higher maggot migration (escape) rate is not a problem in the outpatient setting. Another advantage of free-range maggots is that we can be more flexible in treating



Figure 1. A 59 year old man, 2 weeks after below-knee amputation (BKA). Note the large necrotic (black) wound (A). MDT was administered (B) instead of further surgical resection. Complete wound healing soon followed.

Story continues on page 5

- Guest Editorial -

Diphyllobothrium latum Therapy for Obesity

By Robert McKie, MD

Biotherapeutic interventions have experienced a resurgence in recent years. Maggot therapy is increasingly used in wound care when other interventions fail.¹ Helmintherapy (swallowing pig whipworm, *Trichuris suis*) appears to be effective in relieving symptoms for many patients suffering from inflammatory bowel disease.² Hirudotherapy (leech therapy) has been shown to aid with several conditions.³ Because of its unique characteristics, *Diphyllobothrium latum* infection may one day have a role in the treatment of obesity.

Obesity and overweight have reached epidemic proportions in the United States.⁴ These conditions contribute to most of the major causes of morbidity and mortality in the developed world, including heart disease, cancer, cerebrovascular disease, Type 2 diabetes, osteoarthritis, hypertension, hyperlipidemia, esophageal reflux, sleep apnea and depression.⁵ Unfortunately, pharmacologic therapy for obesity has been limited by cost and side effects. Therapy with *D. latum* may prove to be a

safer and cheaper way to induce weight loss in patients.

The side effects of weight loss drugs have been well documented. The combination of fenfluramine and phentermine (Fen/Phen) has been implicated in valvular heart disease.⁶ Because of this, fenfluramine and similar compounds were removed from the U.S. market.⁷ Phenylpropanolamine was restricted in the U.S. after it was demonstrated that its use as an appetite suppressant increased the risk of intracranial hemorrhage.^{7,8} Ephedra and ephedrine are effective anorectic agents, but psychiatric, cardiac and neurologic side effects limit the appropriateness of their use.⁷ Sibutramine therapy costs over \$1,000 per year,⁹ and can cause elevated blood pressure.⁷ Orlistat therapy costs over \$1,500 per year,⁹ and has prominent gastrointestinal side effects.⁷

D. latum infection also has been shown to cause weight loss.^{11,12} Aside from weight loss, though, *D. latum* is a surprisingly benign infection. Most patients are asympto-

matic, and those symptoms that occur tend to be vague and mild.^{10, 12, 13} Vitamin B12 deficiency is common, but megaloblastic anemia occurs in only about 2% of infected patients.¹³ More severe manifestations, including hemoptysis, neuropathy secondary to B12 deficiency and intestinal obstruction have been reported in the literature. However, even more severe cases have resolved quickly once the parasite was eliminated.¹¹

Therapeutic infection with *D. latum* would require one-time administration. Compliance could approach 100%. When the patient no longer required therapy, anti-helminthic treatment for *D. latum* would terminate therapy. For example, a single dose of Praziquantil is effective in eliminating *D. latum* in over 95% of patients.¹³

When compared with available pharmacologic agents, *D. latum* biotherapy may prove to have a number of advantages. Cost would likely be dramatically lower than current agents. Patient compliance would be better with one-time dosing compared with

daily dosing with sibutramine or three-times daily dosing with orlistat. If vitamin B12 deficiency can be prevented either with oral or intramuscular supplementation, the side effect profile may also prove more benign than currently available agents for obesity. Helminth infections for weight loss have long been the territory of historical interest and urban legends.¹⁴ With proper investigation, *D. latum* biotherapy may one day have a role in helping to manage the epidemic of obesity.

Cited references can be found at:

www.bterfoundation.org/indexfiles/dlatumrefs.htm

Editor's Note: Dr. McKie is a physician in the Department of Medicine, Boise Veterans Affairs Medical Center. His specialty is internal medicine. He can be reached at:

Robert McKie, MD
Department of Medicine
Boise VA Medical Center
500 West Fort Street
Boise, ID 83702
208-422-1000, ext 1333
Robert.McKie@va.gov

Anyone wishing to participate in a study of *D. latum* biotherapy should contact Dr. McKie or the BTER Foundation.

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Community Announcements

New supplier of Medical Maggots — Medical maggots™ are no longer available from the University of California. But wait! They *are* now available from California-based Monarch Labs (website: www.MonarchLabs.com)

Maggot Therapy book in Portuguese — A new handbook on maggot therapy was recently written in Portuguese and accepted for publication by Editora da Universidade Federal de Santa Catarina.

When published, the book will include five chapters, 13 figures (most of them colored), two tables, and 50 references, covering the history of maggot therapy, its utility in medicine, fly biology and morphology, fly taxonomy and identification, and how to collect, rear, and process the flies. The book was written simply

in Portuguese for physicians, veterinarians, nurses, and the lay public. This 70-page handbook is intended to help introduce and support maggot therapy in Brazil and other Portuguese- and even some Spanish-speaking countries.

The author, Dr. Carlos Brisola Marcondes (cbrisola@mbox1.ufsc.br), seeks financial support to complete the publication. The International Biotherapy Society has already contributed 500 euros to the project; approximately 1,500 dollars U.S. are still needed. Anyone able to help sponsor this project should contact Dr. Marcondes. Sponsorships will be credited, and arrangements can be made for sponsors to receive copies of the book for distribution. E-mail Dr. Marcondes at : cbrisola@mbox1.ufsc.br.

MDT in The Netherlands

Story continues from page 3

patients. For example, the number of maggots needed per clinic-day is estimated in advance, but the number actually needed for each patient may be different from what was anticipated. Some wounds need less maggots than calculated, some wounds already under treatment might already be fully debrided, and still other patients may be identified as MDT candidates after the maggots have been ordered. Free-range maggots can be allocated and applied in a more precise and individualized dose, determined at the bedside. The free-range technique is not only more effective, but in our opinion, also more cost-effective. By contrast, the smallest maggot containment dressing available contains 50 to 100 maggots, even though some wounds require only 10 to 20 maggots.

The following indications lead us to use maggot containment dressings: patient preference, wounds that are close to internal organs, and patients receiving anticoagulation therapy. Biobags are also used occasionally for patients with severe, uncontrollable pain with free-range maggots.

Dr. Pascal Steenvoorde is a resident Surgery, with special interest in wound management. Dr. Jacques Oskam is a consultant vascular surgeon and managing director of the Rijnland Chronic Wound Knowledge Center.

* * * * *

Editor's Note: Opinions expressed are those of the authors only, not the BTER Foundation. For more information about the authors' maggot therapy experience and program, check out their other publications:

Steenvoorde P., Buddingh T.J., van Engeland A., Oskam J.. Maggot therapy and the "Yuk" factor: An issue for the patient? *Wound Repair Regen.* 2005;13:350-2.

Steenvoorde P., Oskam J.. Use of larval therapy to combat infection after breast-conserving surgery. *J Wound Care.* 2005;14:212-3.

Steenvoorde P., Jukema G.N. The antimicrobial activity of maggots: in-vivo results. *J Tissue Viability.* 2004;14:97-101.

Steenvoorde P., Jukema G.N. Can laboratory investigations help us to decide when to discontinue larval therapy? *J Wound Care.* 2004;13:38-40.

Jukema G.N., Menon A.G., Bernards A.T., Steenvoorde P., Taheri Rastegar A., van Dissel J.T. Amputation-sparing treatment by nature: "surgical" maggots revisited. *Clin Infect Dis.* 2002;35:1566-71.

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Irvine, CA 92617

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