

**Immunservice questionnaire:**

- 1. Please can you give us a short description of what your firm does? What healthcare areas does your firm specialise in?**

*Immunservice is the expert for innovative well-tolerated therapeutic use of cytokines, in particular interleukin-2, the major immune-modulating hormone in humans and animals. In our innovative indications we use cytokine therapy to treat obesity (international patents granted, EU, USA) and nicotine addiction (international patents granted, EU, USA), making smart use of natural immunological mechanisms in the exciting new field of **immunometabolism** to downregulate appetite and nicotine craving, with promising results already obtained in clinical trials with patients.*

*Our clinically most advanced development, interleukin-2 for inhalation, covers **cancer** indications. It is used to treat patients with lung metastases of renal cell cancer or melanoma and has been shown in clinical trials to cure or at least prevent suffocation from these tumours.*

*Treatment of **viral diseases** is another successful area covered by Immunservice. In an ongoing field trial a new therapeutic antiviral vaccine developed by Immunservice has produced fascinating results against aggressive tumours in animals, particularly papilloma virus-induced sarcoids in horses.*

*Immunservice is an EMA-recognized SME company (small and medium-sized enterprise) specialised in the R&D of interleukin-2. The goal of our company is to close therapeutic gaps by developing medicinal products, in particular interleukin-2, for immunotherapies.*

*Our innovative products are already available to everybody for research purposes. Immunservice sells recombinant human interleukin 2 for research use as well as i2Cult IL-2 Complete Medium, a ready-to use medium for the culture of interleukin-2-dependent cells, such as the murine T-cell line CTLL-2, and we provide a well-developed, ready to use WST-1 Cell Proliferation Kit for measurement of cell proliferation.*

- 2. Can you please describe your role within the company? How did you get to be in this position, and what are your responsibilities?**

*After 20 years of university- based research on preclinical in vitro and animal studies and leading single- and multicentre clinical trials in the cytokine field, I founded Immunservice in 2006 to make sure that these curative and well-tolerated immunological therapies would be made available to patients in high need. I am CEO and CSO and the head of an interdisciplinary and highly motivated and specialised R&D team. My major tasks have been to secure funding of our activities, initiate a top-*

*quality GMP production of our different innovative interleukin-2 products and vaccines, and realise strategies for market access of our innovative products, including patent development and regulatory activities such as scientific advice procedures and orphan designations. Additional tasks involve intelligent design of clinical trials to provide patients in high need with effective therapies that are safe and affordable and produce convincing and clear results within short timelines.*

**3. How does your firm stand out from the crowd in these competitive times?**

*In one stop Immunservice offers potential customers and licensees affordable access to different variants of top- quality GMP- grade interleukin-2, R&D interleukin-2, i2Cult media, analytical immune and bioactivity tests and proprietary and IP-protected interleukin-2 based medicinal products and vaccines, including patient data from clinical trials in highly innovative fields, in particular blockbuster areas of high need but also orphan indications. Development of animal pharmaceutical immune products is also within the scope of our activities. We are the only company worldwide where you will find such expertise and products on one shelf.*

*I have been very active in the field of interleukin-2 immunotherapy for some 30 years now, but almost every day a new promising field arises for effective use of this immune hormone, such as immunometabolism, addiction, ageing, neurodegeneration . For me personally, interleukin-2 has become not only a subject of research but also a field of deep fascination reflecting how nature controls and manages the most complicated functions of the body logically and efficiently. We will benefit dramatically once we learn from this natural model.*

*In addition, Immunservice is structured to allow quick and non-bureaucratic decisions.*

**4. How is your company performing at present?**

*Immunservice successfully develops immune pharmaceutical medicinal products and has a webshop that offers specialised, top-quality immune research material tested for excellent performance, as well as GMP grade interleukin-2 products and immunological test services. Immunservice is proud that our clinical developments are supported by two highly experienced private business angels and a foundation active in pushing promising new treatment options as well as by the High-Tech Gründerfonds, Germany's most active and leading seed stage investor. Moreover, sales of our webshop products are growing and contribute to our strong standing in the biotech area. Our most successful products for sale are recombinant human interleukin 2 for research use, i2Cult IL-2 Complete Medium, a ready-to use medium for the culture of the Interleukin-2-dependent cells like the murine T-cell line CTLL-2 and the WST-1 Cell Proliferation Kit for the easy measurement of cell proliferation.*

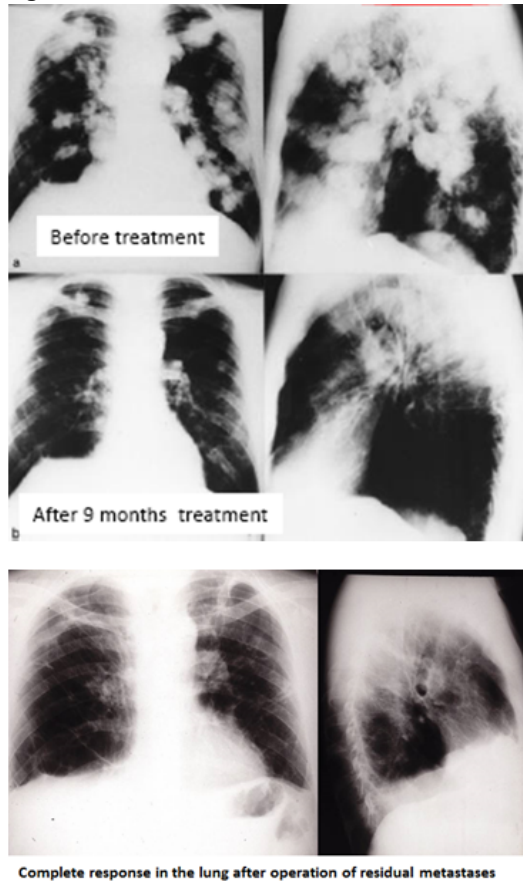
**5. Can you highlight any good examples of innovation and stellar performance in your company?**

*We are intrigued by our clinical results for the immunotherapy of obesity: Mucosal interleukin-2 application in patients leads to a natural modification of appetite to a preference for a (low calorie) healthy type of food. High calorie food becomes unattractive. This results – without any particular diet or behaviour control - in a median weight reduction of 3.7 kg in 12 weeks. Most important, the more obese a patient is, the higher the weight loss, with a maximum of 15 kg (125 kg to 110 kg) observed. Another interesting observation was that patients lost interest in nicotine*

*with inhalation of interleukin-2. These patients stopped craving cigarettes, with the added benefit that they did not put on weight.*

*We are also overwhelmed by the eradication of lung metastases by inhalation of interleukin-2: The first patient to be treated with inhalation interleukin-2 was a 40-year-old man presenting with significant breathing difficulties caused by a multitude of huge lung metastases. He was unable to speak without breathing problems. He received inhalation interleukin-2 under my personal supervision and within 9 months the vast majority of his metastases had disappeared, and some remaining small residuals finally were successfully removed surgically. His lung became free of disease and he never suffered from lung metastases again.*

*Fig 1 below*



*Immunservice has the most extensive experience worldwide in use of interleukin-2 for inhalation to prevent suffocation in patients with lung metastases. Huland in 1990 was the first to introduce local interleukin-2 administration by aerosol and has optimized this therapy since then continually. Currently, we have documented treatment in several hundred patients.*

**6. Can you please expand upon your fascination with the immune hormone interleukin-2 and how it pertains to the work that you do?**

*Most fascinating is the fact that interleukin-2, this endogenous immune hormone, enables your immune system to cure cancer, conquers viral diseases, stops allergies, rejuvenates the immune system, eliminates aggressive papillomavirus tumours, melts*

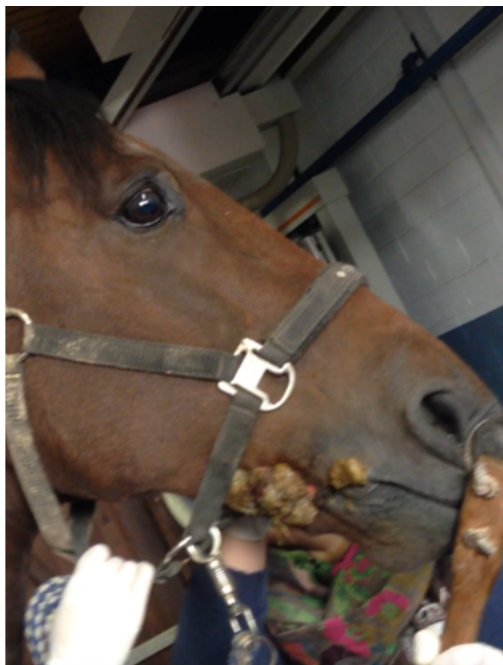
*away excess pounds, makes nicotine addiction vanish and much more. Since I started working with interleukin-2 more than 30 years ago it has never ceased to amaze me.*

**7. Do you have any client testimonials you would like to share?**

*Yes, treatment of an extensive papilloma virus tumour in a horse. The owner of a horse suffering from a treatment-resistant aggressive and extensive papilloma virus-induced tumour was routinely asked by the nurse to measure the tumour size after a cycle of therapy and this is what he wrote:*

*„Unfortunately, I cannot measure the tumour near the mouth . There is nothing left !!!! It fell off. Completely, and leaving a really nice scar. The tumours on the hind leg are also decreasing. It is unbelievable. I just tried to call you because I could hardly find the words to put this in writing!!“*

Fig 2 Horse



Horse before (left) and after (right) therapy with our interleukin-2 adjuvanted therapeutic vaccine.



**8. What role do your staff play in the successes of your firm?**

*The team is crucial for the success of our company. Our daily work requires highly specialised employees who are fascinated by research and are not deterred by setbacks. Everybody is involved in the science, and learning is extremely important to the staff of our company, and we have been very successful with this approach. Because we work in a highly specialised field, the company's success depends strongly on the knowledge and skills of our staff and we are very lucky to have assembled highly motivated, well educated and very stress resistant experts in their specific fields in this company. We also have a loyal crew of external advisors who have accompanied us for years with outstanding expertise. Nothing would be possible without the team!*

**9. What challenges do you face in the future, in terms of the company and the industry you work in?**

*Unlike in the early years of our company when immunotherapy was a niche market, today immunotherapy is in the centre of interest of most if not all pharmaceutical companies. There is a rising number of approved immunotherapeutics but also in the pipeline drugs. Our experience and our products will add to the potential of the big players in the pharmaceutical sector. We will set our marks in terms of well-tolerated and affordable immune products in areas of high need in humans and animals. Immunotherapy currently has by no means been developed to its full potential; we will help to change this.*

10. **What recent breakthroughs has your company realised in the last year or so? Where do you see these developments leading you in the next few years?**

*Discovering and continuously developing ways to cure cancer, viral diseases, obesity and nicotine addiction and providing patients with access to these therapies will be the focus of immunservice's activities in the next few years. Our work so far gives us a very sound basis for achieving these goals successfully.*

11. **Is there anything else that you would like to add?**

*In the not so distant future we will be asking ourselves why it took so long to integrate highly needed curative immune therapies into current treatment protocols. In the sincere interest of patients in high need and in our own interest as potential future patients we clearly need to improve our procedures for establishing effective treatments faster.*

*And if we are looking for success, I am convinced the we will find the best resources by learning from the tricks of nature.*

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