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NANO-RAST : Nanomotion-based Resistell AST to determine the antibiotic susceptibility of Gram-negative bacteria causing bacteremia and/or sepsis.

This research project is organized by Resistell AG, Hofackerstrasse 40B, 4132 Muttenz

Dear Madam, Sir,

The patient has been integrated into a research project in an emergency situation. In all likelihood, the patient will remain permanently incapable of discernment and, therefore, of communicating their wishes. As you represent the patient as one of their relatives, we have prepared this document to inform you about our research project and allow you to confirm the patients presumed wishes. In addition, we ask you to grant us, with retroactive effect, as the patients relative, your consent to allow the patient to participate in this project.

Below, is an introduction to the project. Please do not hesitate to ask further questions if there is anything you do not understand or would like further clarification on.

1. Aim of the study

In this project, we want to investigate how accurate a new device is at predicting whether a particular medicine will work against certain bacterial infections in patients that are currently at the Lausanne University Hospital – Centre Hospitalier Universitaire Vaudois (CHUV) due to these infections. The new device is called Resistell AST.

2. Resistell AST

When bacteria develop the ability to defeat the drugs (antibiotics) designed to eradicate them, this results in the drug becoming ineffective and the bacteria continue to grow — this phenomenon is called antibiotic resistance. Infections caused by such bacteria can be life-threatening and very difficult to treat and may require alternative antibiotic medicines.

In such situations, it is very important to know early during an infection whether a drug will work against a bacterial infection or not. Currently, several tests exist that can assess this. These tests are called antibiotic susceptibility tests (ASTs). However, the time to result can range from 8 to 48 hours, depending on the test.

Resistell AST is a rapid test that could significantly reduce the time needed to obtain a result by a minimum of 6 hours to a maximum of 46 hours, giving an approximate time to result of about 2 hours. This time is crucial in life threatening situations and starting patients on the right treatment is important to improve survival.

3. Who can participate?

Participation is open to all people who are admitted at CHUV due to certain bacterial infections that can be detected in the blood of the patient. This condition is called bacteremia. However, due to logistical restraints we can only enroll patients whose blood tests positive for the bacteria before 12:00 (noon) on weekdays.

If the patient (your relative) has more than one kind of bacteria in their blood, they cannot take part in this study.

Your relative is eligible to take part in this study because their blood showed the presence of the following bacteria that we are interested in: *Escherichia coli*, *Klebsiella* spp., other Enterobacteriaceae, *Pseudomonas aeruginosa*, or other non-fermentative bacteria.

4. General information about the project

This project is carried out in accordance with Swiss law. This study also complies with all internationally recognized guidelines. The Cantonal Ethics Committee of Vaud has examined and approved the study.

This study is designed to investigate how accurate Resistell AST (new device) is at determining which bacteria are resistant to antibiotics from a blood sample. To achieve the goals of this study, three hundred patients will be recruited at CHUV. We estimate that the study will take about 12 months to complete.

As this study is being carried out at the CHUV hospital, including the intensive care unit (ICU), emergency room, and other departments, it is likely that we would have to include patients in this study under emergency situations. Meaning, that we may not have time for the patient's medical condition to improve and to obtain their consent to participate in the study. Hence, we ask the patients relatives for their consent whenever possible.

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5. How the study will unfold

If you agree for the patient (your relative) to take part of this study, we will use the blood sample(s) that was left over after the routine Antimicrobial Susceptibility Testing (AST) at the microbiology laboratory at CHUV. **Please note that only the bacteria extracted from the patient's (your relative's) blood will be used. No other samples (for example, blood cells, genetic material, etc.) will be taken from the patient's (your relative's) blood for this study.**

- **The sample(s) will be pseudo-anonymized (identifiable data is replaced) and a unique identification number will be used** to follow the patient and find out which antibiotic treatment they received whilst in the intensive care unit or emergency room.
- The doctor treating the patient or your relative in the intensive care unit or the emergency room will be asked to fill in a questionnaire before reviewing the results obtained from the Resistell AST device and then consequently asked to fill in a second questionnaire after they have seen the Resistell AST results.
- The questionnaire will allow us to understand whether the results obtained by Resistell AST could influence a doctor's clinical decision making to improve the outcome for the patient.

We may need to withdraw the patient from the project before the end of the study if they are diagnosed as having multiple types of bacteria in their blood. We will inform the attending physician of the participation of the patient in this project. If you would rather that the treating physician was not informed about the patient's participation in the study, please discuss this with the investigating physician / project manager.

Other diagnostic tests will also be routinely performed by the hospital and these include:

- The disk diffusion test (Kirby-Bauer test) ; this test enables doctors to understand which bacteria can be killed with which antibiotics.
- VITEK 2 ® or BD Phoenix ™ systems; these automated systems determine both bacteria-killing antibiotics as well as the lowest concentration of antibiotic needed to prevent bacterial growth.
- Epsilometer test ; this test enables doctors to determine the lowest amount of an antibiotic that is needed to stop the bacteria from growing.

In addition, a complete medical history including past and current medical conditions, age, gender, site of infection if present, race, ethnic origin, height (in cm), body mass index (in kg/m2 with one decimal), allergies, and surgical procedure history will be recorded.

6. Benefits for the participants

Participation in this study will not bring any personal benefit to the patient (your relative). However, the results of the research could be important for people affected by similar bacterial infections in the future.

7. Rights

Participation in this project is optional. If the patient does not wish to participate or if you as a relative later change your decision regarding the study, you will not have to justify yourself. This will not affect the treatment or the medical care of the patient (your relative). You can ask questions about participation and the project at any time. To this end, please contact the person listed at the end of this fact sheet.

8. Obligations

For the study participant, there are no obligations arising from the project except to sign the consent form.

9. Risks

As we intend to use blood that has already been collected from the patient (your relative), they will not be exposed to any additional risks by participating in the study.

10. Results

The physician-investigator/project manager will notify you, as a relative, of any new discoveries that may affect the benefits or safety of the study and, thus, the consent to participate.

11. Confidential processing of data and samples

For this project, we will record the patient's personal and medical data. Only a limited number of people will have access to this data in an uncoded format and this access will exclusively be granted for tasks that are

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necessary in order to complete the project**. All the information will be coded and therefore pseudo-anonymized when the results are reviewed. Encoding (pseudo-anonymizing) means that all patient-identifying data (name, date of birth) is erased. Each patient is assigned a unique code and the key to decode this will remain at the hospital (CHUV). Without this unique code and key, it is not possible to link the data to the patient.** On occasion, scientific journals require access to individual data (raw data). If this is the case, it will always be coded and therefore does not identify the patient as a person. Everyone involved in the project is bound by professional secrecy.

Throughout the project, the site may be inspected by the relevant ethics commission or by the institution that commissioned the project. For these inspections, the project manager must grant access to the relevant investigators and allow them to see patient's personal and medical data.

12. Withdrawal from the project

The patient can withdraw from the study at any time if they wish to or if you, as a relative decide to do so. The data and samples collected up until patient withdrawal will not be used for any further analysis. The samples will be stored in the hospital in accordance with the CHUV hospital specifications.

13. Repairing damage

The patient does not receive compensation for their participation in this project.

14. Liability

Damage related to the research project is covered by the institution or company that commissioned it and is responsible for its conduct. The conditions and procedures are regulated by law. This is a category A study according to Human Research Ordinance (HRO). The personnel involved in the study are covered under general liability insurance provided by the Sponsor according to Art. 19 of the Swiss Human Research Act (HRA).

15. Funding

This project will be funded by Resistell AG and Innosuisse – Swiss Innovation Agency.

16. Contact person

If you have any doubts, concerns or emergencies during or after the project, feel free to contact the team using the information below:

On site study management: Gilbert Greub

Complete address and telephone number contactable on weekdays and email address:

Institute of Microbiology CHUV

Rue du Bugnon 48

CH-1011 Lausanne, Switzerland

Tel: +41 21 314 4056

Email: gilbert.greub@chuv.ch

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Statement of consent

Written Declaration of Consent for Participation in a Research Project

Please read this form carefully. Do not hesitate to ask questions if there is anything that you do not understand or would like further clarification on. For patient participation, your written consent as a relative is required.

BASEC number of the research project (after submission to the relevant ethics COMMISSION) :	2020-01622
Title **(scientific and usual) :**	Nanomotion-based Resistell AST to determine the antibiotic susceptibility of Gram-negative bacteria causing bacteraemia and/or sepsis.
Responsible institution **(project manager and full address) :**	Gilbert Greub Institute of Microbiology CHUV Rue du Bugnon 48 CH-1011 Lausanne, Switzerland
Study location :	Intensive Care Unit (ICU) or Emergency Room, CHUV Lausanne
Project manager on site : Name and surname in capital letters :	
Participant : Name and surname in capital letters : Date of birth :	☐ female ☐ male

- As a relative of the aforementioned patient, I acknowledge receiving written and oral information from the physician-investigator about the objectives, the scope, possible benefits, disadvantages and risks of participating in the above-mentioned study.
- I confirm that I am making the decision on behalf of the patient as a relative and consent that the patient can participate in this clinical study. On the patient's behalf, I accept the written and oral information. Furthermore, I also acknowledge that I had enough time to make an informed decision.
- I have received the answers to the questions I have asked in relation to participation in this project, I will keep the information sheet and receive a copy of my consent statement.
- I agree that the patient's treating physician should be informed of his or her participation in the research project.
- I accept that the competent specialists of the management/principal of this project, the competent ethics commission, may consult the patient's uncoded data in order to carry out checks, provided, however, that the confidentiality of this data is strictly assured.
- I know that personal data (including the samples) can only be transmitted in a coded format and for research purposes as part of this project.
- On behalf of the patient, I may, at any time and without having to justify myself, revoke my consent of the patient to participate in this study, without adversely affecting the patients' medical treatment/management. Data and samples collected to date will, however, still be analyzed for project purposes.

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- The hospital/institutional civil liability covers any damage that may result from the project.
- I am aware that the obligations mentioned in the fact sheet must be met for the duration of the project. The investigating physician may exclude the patient at any time if this is deemed necessary.

Location, date	Name and surname in capital letters : Relationship with the patient (spouse/son or daughter etc.) : Signature of the relative :

Certificate from the investigating physician/investigator: I hereby certify that I have explained to the relative of the participant the nature, importance and scope of the project.

I declare that I meet all legal obligations related to this project. If I was to become aware, at any time during the project, of elements likely to influence the consent of a participant to take part in the research project, I agree to immediately inform the patient's relative.

Location, date	Name and surname in capital letters of the physician-investigator/investigator providing the information : Signature of the physician-investigator/investigator :