



Co-funded by the Prevention of and Fight
against Crime Programme of the European Union

PROFILING WORKSHOP, June 14 – 16, 2016
HIGHLIGHTS



Compiled by S. Klemenc, June 2016

Sonja.klemenc@policija.si

MNZ GPU, National Forensic Laboratory, Vodovodna 95, 1000 Ljubljana, Slovenia

WORKSOP AT A GLANCE

Project task: WS 2.6 (second event, June 2016, working days 14th to 16th June)

Goal - aim: To enhance the understanding of profiling concepts and profiling competencies of forensic experts by workshop assisted learning. Seminar – workshop was primarily opened to the members of **ENFSI DWG** (European Network of Forensic Science Institutes – Drugs Working Group).

Workshop programme – see at:

[**\(Events\)**](http://www.policija.si/eng/index.php/generalpolicedirectorate/1669-nfl-page-response)

Number of participants: 24 (4 mentors + 17 trainees + 3 organizers)

Participants were from 12 countries (14 institutions): France (mentors (2) + trainees (2)), Switzerland (2 invited mentors + 1 trainee), Croatia (2), Denmark (1), Estonia (1), Finland (1) Hungary (2), Israel (1**), Italy (1), Lithuania (1), Portugal (2), Slovenia (1 trainee + 3 organizers).

Workshop evaluation – see at:

[**\(Events\)**](http://www.policija.si/eng/index.php/generalpolicedirectorate/1669-nfl-page-response)

First announcement

de Vous-même ★
sujet drug profiling seminar - Ljubljana - June 2016
pour Boumrah Yacine ★, Hayk Kasparyan ★, wolfgang.greibl@bmi.gv.at ★, Filip.VanDurme@just.fgov.be ★, Natalie Meert ★, Stefan Yosifov ★, Petek Maja Jelena ★, Houra Tomislav ★, Maria Afxentiou ★, Pavel Tomicek ★, Mogens Johar 73 de plus autres actions ▾

12/02/2016 10:53

Dear all,

It is my pleasure to announce that we will hold again a New Scientists Seminar on Drug Profiling in Ljubljana, Slovenia, in June 2016 (expected dates: 14-16 june). Thanks to a European funded project coordinated by the Slovenian National Forensic Laboratory, we have the opportunity to reimburse the costs for 15 attendees.

Please be aware that this seminar is primarily open to ENFSI DWG members.

Secondly, attendance costs are only reimbursed for people working in **EU member states** forensic laboratories.

More than one person from the same laboratory may attend the seminar (it also depends on the total number of candidates).

Details about reimbursement (for EU member states only): accomodation is directly covered by the project, travel and other costs are reimbursed (based on bills).

The deadline to apply is: 25 march 2016.

Best regards,
Fabrice



Fabrice BESACIER
Ingénieur en Chef
Chef de Division Chimie - Laboratoire de Lyon
31 Avenue Franklin Roosevelt
69134 Ecully Cedex
Tél. : 04.72.86.89.82
Mél : fabric.bejacier@interieur.gouv.fr

Registration and hotel reservation form
RESPONSE PROJECT
PROFILING WORKSHOP
(June 14th-16th, Ljubljana, 2016)
(one person per form)

Registration/hotel reservation deadline: 17th APRIL 2016

1. Personal data

Title:	Please select from the list	Gender:	Please select from the list
First name:		Middle name:	
Last name:			

2. Address for correspondence

Institution:	
Street & number:	
City:	
Country:	
Phone:	
E-mail:	

3. Accommodation reservation

a) for all participants from the EU member states rooms will be booked by the host (INFSI) and are paid directly from the project budget (please, indicate arrival and departure date and select yes - EU member state participant)

b) for participants from non EU member states host can book a room - but accommodation expenses shall be arranged by themselves
(please indicate YES - non EU member state participant or NO)

Arrival date (ddmmmyyy):	Departure date (ddmmmyyy):	No nights:
Accommodation: Please select from the list		
I will share room with: <input type="text"/>		

FORM SUBMISSION

Please send your registration form to Sonja Klemenc:
saklement@znanek.com

IMPORTANT information:

For EU member states participants:

- accommodation & breakfast will be paid directly from the project budget, by the host
- travel costs (airline tickets, train, bus, car rental, taxi, etc.) - reimbursed after the meeting (original invoices for flight ticket and boarding passes are required documents)
- other costs (shuttle from/to the airport) - reimbursement after the meeting (original invoices are required documents)
- meal expenses (meals during the meeting, coffee break, etc.) - you request **nonbreakfast as private meal or private meal rule** of your institution, if you request **nonbreakfast as private meal**, tickets for the local transport will be provided by the host
- travels in Ljubljana, tickets for the local transport will be provided by the host

Higher reimbursement rates are valid in some situations, please contact the project manager Sonja Klemenc: saklement@znanek.com for further information, if your flight ticket is above 450 €.

Reimbursement form will be provided by the host.

For non EU member state participants:

They shall arrange the travel and accommodation expenses by themselves. Costs for non EU participants are not considered eligible by the EU Commission.

Homework!

Mentors were very demanding! They requested that homework (theoretical and practical) is done before the workshop!

 Co-funded by the Prevention of and Fight against Crime Programme of the European Union 

PROFILING WORKSHOP – Instructions for the trainees
(June 14th-16th, Ljubljana, 2016)

You have received several documents:
- 1 set of raw MS data (15 folders)
- 2 publications
- the methodological chart drawn by the drug profiling subcommittee
- the seminar program

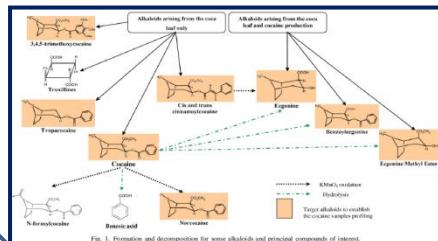
- Instructions
Everyone has at his disposal 1 set of raw GC-MS data (Agilent format) including 15 cocaine profiles.

The work you have to do before the seminar is the following:
- identify the compounds in the profiles
- integrate the compounds
- compare the profiles using any tool at your convenience (for example, visual comparison or mathematical)

The 2 publications and the methodological chart, which are available as pdf files, are at your disposal to help you.

Following that homework, please send a maximum of 3 questions regarding the topic and exercise to me (site issues, unclear points, etc.): (fabrice.besacier@interieur.gouv.fr).
The deadline to submit questions is the 3rd of June.

This is very important, as your questions will be addressed during the seminar (in different seminar phases or as separate additional topics).



U_FB_ENFSI_Seminar program 2016
U_FB_ENFSI_NS seminar_NS seminar ENFSI_Raw data set 1
U_FB_ENFSI_NS seminar_NS seminar ENFSI_Litterature_FSI167_Interreg I
U_FB_ENFSI_NS seminar_NS seminar ENFSI_Litterature_Esseiva (2011) - Illicit drug profiling
U_FB_ENFSI_NS seminar seminar 2016_PARTICIPANT FILES_Part 1_Methodological chart_methodological_chart_drug_profiling
U_FB_ENFSI_instructions seminar 2016

Datum spremembre

06/05/2016 14:28
06/05/2016 14:28
06/05/2016 14:28
06/05/2016 14:28
06/05/2016 14:28
06/05/2016 14:28
06/05/2016 14:28

Methodological approach for drug profiling implementation

Abstract
The paper presents a methodology for the implementation of illicit drug profiling. This methodology is based on the experience of the French and Spanish national forensic services in the field of illicit drug profiling. It consists of a series of steps to implement the methodology in a laboratory setting. The methodology is divided into three main phases: model construction and evaluation, validation on an extended set of specimens, and model application and utilization. The methodology is based on a combination of analytical methods, including chromatography and mass spectrometry, and statistical methods, such as multivariate analysis and machine learning. The methodology is designed to be flexible and adaptable to different types of specimens and different laboratory environments. The methodology is intended to provide a systematic approach to the implementation of illicit drug profiling in a forensic laboratory setting.

Keywords
Illicit drug profiling, methodology, implementation, validation, application, utilization.

Methodological approach for drug profiling implementation

Abstract
The paper presents a methodology for the implementation of illicit drug profiling. This methodology is based on the experience of the French and Spanish national forensic services in the field of illicit drug profiling. It consists of a series of steps to implement the methodology in a laboratory setting. The methodology is divided into three main phases: model construction and evaluation, validation on an extended set of specimens, and model application and utilization. The methodology is based on a combination of analytical methods, including chromatography and mass spectrometry, and statistical methods, such as multivariate analysis and machine learning. The methodology is designed to be flexible and adaptable to different types of specimens and different laboratory environments. The methodology is intended to provide a systematic approach to the implementation of illicit drug profiling in a forensic laboratory setting.

Keywords
Illicit drug profiling, methodology, implementation, validation, application, utilization.

Illicit drug profiling, reflection on statistical comparisons

Abstract
The paper presents reflections about statistical considerations on illicit drug profiling and their impact on the methodology. The methodology is based on the experience of the French and Spanish national forensic services in the field of illicit drug profiling. The methodology is divided into three main phases: model construction and evaluation, validation on an extended set of specimens, and model application and utilization. The methodology is based on a combination of analytical methods, including chromatography and mass spectrometry, and statistical methods, such as multivariate analysis and machine learning. The methodology is designed to be flexible and adaptable to different types of specimens and different laboratory environments. The methodology is intended to provide a systematic approach to the implementation of illicit drug profiling in a forensic laboratory setting.

Keywords
Illicit drug profiling, methodology, implementation, validation, application, utilization.

Results and discussion
Conclusion
References

Fig. 2. Evaluation of the linear detection area of cocaine compounds and the evaluation of the non-projective area of cocaine compounds.

(A) Evaluation of the linear detection area of cocaine compounds and the evaluation of the non-projective area of cocaine compounds.

(B) Evaluation of the linear detection area of cocaine compounds and the evaluation of the non-projective area of cocaine compounds.

(C) Evaluation of the linear detection area of cocaine compounds and the evaluation of the non-projective area of cocaine compounds.

(D) Evaluation of the linear detection area of cocaine compounds and the evaluation of the non-projective area of cocaine compounds.

Location: Ljubljana, Slovenia, National Forensic Lab.



The dragon – city emblem

<http://www.ljubljana.si/en/>



<http://www.policija.si/eng/index.php/generalpolicedirectorate/1079-national-forensic-laboratory>

GROUP PHOTO

PROFILING WORKSHOP

National Forensic Laboratory, 14 - 16 June 2016



NACIONALNI FORENZIČNI LABORATORIJ
NATIONAL FORENSIC LABORATORY

Co-funded by the Prevention and Fight
against Crime Programme of the European Union



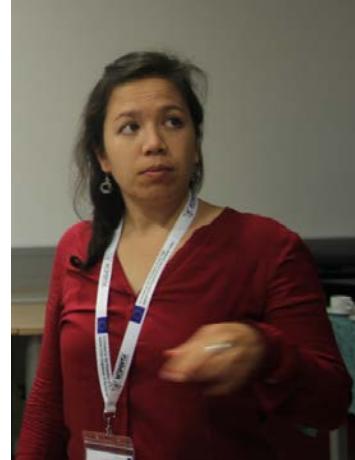
Mentors



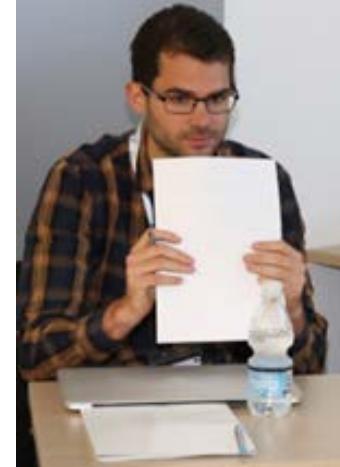
Dr. Laurence Dujourdy,
INPS Lyon, FRANCE



Dr. Fabrice Besacier,
INPS Lyon, FRANCE



Dr. Natacha Gentile,
UNIL, Switzerland



Dr. Julian Broséus,
UNIL, Switzerland



WELCOME AND OPENING REMARKS



Presentations



Profiling seminar 2016 : Ljubljana 14-16.06.2016

Introduction

Natacha Gentile, Julian Broséus, Laurence Dujourdy, Filip Van Durme, Fabrice Besacier

mercredi, 15 juin 16

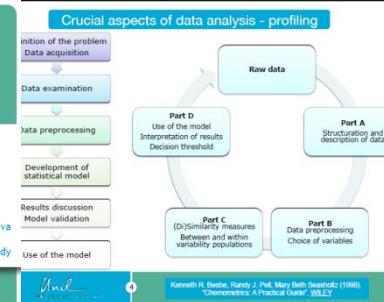


Profiling seminar 2016 : Ljubljana 14-16.06.2016

Hands-on part: Instructions

Natacha Gentile, Julian Broséus, Laurence Dujourdy, Filip Van Durme, Fabrice Besacier

mercredi, 15 juin 16



New Scientist Seminar
Statistics in illicit drugs profiling

Julian Broséus, Natacha Gentile, Pierre Esseiva
Fabrice Besacier, Laurence Dujourdy

Kenneth R. Beale, Randy J. Phillips, Mary Beth Stoeckli (1998), "Chemometrics: A Practical Guide" WILEY



Profiling seminar 2016 : Ljubljana 14-16.06.2016

Part C: Building the model

Natacha Gentile, Julian Broséus, Laurence Dujourdy, Filip Van Durme, Fabrice Besacier

mercredi, 15 juin 16

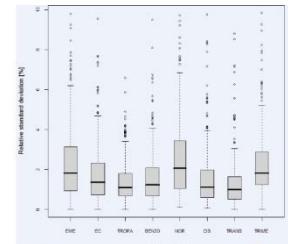


Profiling seminar 2016 : Ljubljana 14-16.06.2016

Part D: Using the model, examples of interpretation issues

Natacha Gentile, Julian Broséus, Laurence Dujourdy, Filip Van Durme, Fabrice Besacier

mercredi, 15 juin 16



Within-variability

Part C & D.
Within and Between Variability Metrics
Decision threshold

Sample	Actual value
032715CH_L_1	350474
032715CH_L_4	723558
032715CH_L_5	720568
032715CH_L_6	139123
034455CH_L_3	1002279
032715CH_L_7	1002460
032715CH_L_2	1229610
030955CH_L_1	1281381
030955CH_L_4	1230761

Mean: 310404.8
SD: 265033.3
25 %: 200

mercredi, 15 juin 16



Profiling seminar 2016 : Ljubljana 14-16.06.2016

Using a database for systematic profiling: The approach in Lausanne (ESC)

Natacha Gentile, Julian Broséus, Pierre Esseiva

mercredi, 15 juin 16



MA Impurities Profiling Data
Multivariate Statistical Analysis

Laurence Dujourdy
Fabrice Besacier

Collaborative Harmonisation of Methods for profiling of Amphetamine Type Stimulants
2004-2006



Co-funded by the Prevention of and Fight against Crime Programme of the European Union

WORKSHOP on PROFILING
Ljubljana 14th – 16th June 2016

Working with HEROIN DATA

Fabrice BESACIER and Laurence DUJOURDY
(Institut National de Police Scientifique INPS, 35 av. Franklin Roosevelt, 92134 GENEVILLE CEDEX, FRANCE)



Co-funded by the Prevention of and Fight against Crime Programme of the European Union

WORKSHOP on PROFILING
Ljubljana 15th – 18th June 2016

A profiling database: OTARIES

Fabrice BESACIER and Laurence DUJOURDY
(Institut National de Police Scientifique INPS, 35 av. Franklin Roosevelt, 92134 GENEVILLE CEDEX, FRANCE)

Training modules - software

Ime	Datum spremembe	Tip	Velikost
4_preprocessed_data	13.6.2016 22:43	Delovni list progra...	116 KB
5_PearsonSimpleENFSI	13.6.2016 22:43	Delovni list progra...	4.188 KB
6_Within_Between	16.6.2016 11:17	Delovni list progra...	180 KB

BoxPlot Brut MatriceFinal MatricePearson SimilarityColumn Instructions

How to use the PearsonSimpleENFSI macro ?

1. In 5_PearsonSimpleENFSI.xls, in the sheet "Brut", click on the "Create your own Similarity Matrix" button
2. Fill in the required information
3. In 4_preprocessed_data.xls, copy the values of the variables you have selected.
4. In 5_PearsonSimpleENFSI.xls, paste the values of the variable in the sheet "Brut".
Note: at this stage, you can also visualise the variability of yours variables in the "Boxplot" sheet. Simply adjust the scale of the y axis of the plot.
5. Click on the "Run Matrix Calculation" button. The similarity matrix is directly displayed in the "MatriceFinal" sheet
6. Click Fin (or "End").
7. Click on the "One_column" button.
8. The values are displayed on one column in the sheet "SimilarityColumn"
9. Copy these values in 6_Intra_Inter.xls

Frequency

Pearson *100

50.000 60.000 70.000 80.000 90.000 96.000 98.000 99.100 99.300 99.500 99.700 99.900 99.920 99.940 99.960 99.980 99.990 99.992 99.994

"Intra"
"Inter"
F+ (%)
V+ (%)
F- (%)

Theory in practice (hard work)

Part A – getting familiar with the data

Aim of this part

- See which parameters you can use or calculate to observe the variability of your data
- Have a reflection on what is expected from the variability of a variable

To help you in your reflections:

1. What is the aim of a profiling method?
2. Is the selection of variables important? If so, why?
3. On which basis do you select them?
4. What do you expect from your variables in your profiling method?

*Unil
UNIL | Université de Lausanne* 5 Hands-on part: Instructions Profiling workshop, Ljubljana 14-16.06.2016



Part B – Influence of data pre-treatments

Aim of this part

- Observe the impact of different data pre-treatments on the dataset (variability, order of magnitude, scale, etc.)

To help you in your reflections:

1. What is a good pre-treatment?
2. What variability do you want to observe?
3. How do you deal with zero data, missing values, too high values?
4. In what this step helps you in the selection of the variables?

Going further...

1. Try to test another pre-treatment
2. Profiling other compounds than alkaloids?
3. What do you need to undertake this profiling?

*Unil
UNIL | Université de Lausanne* 10 Hands-on part: Instructions Profiling workshop, Ljubljana 14-16.06.2016





Spare time - dinner



ACKNOWLEDGEMENT

- to outstanding mentors:

Dr. Laurence Dujourdy, INPS, France

Dr. Fabrice Besacier, INPS, France

Dr. Natacha Gentile, UNIL, Switzerland

Dr. Julian Broséus, UNIL, Switzerland

- to NFL staff - technical organizers:

Mr. Borut Jesenko, Dr. Katja Benčina and Dr. Sonja Klemenc

- to EU COMMISSION: *The RESPONSE project is financially supported by the Prevention of and fight against crime Programme of the European Union (grant agreement number JUST/2013/ISEC/DRUGS/AG/6413). We kindly acknowledge this!*

The content of this presentation is the sole responsibility of the author and can in no way be taken to reflect the views of the European Commission.