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Colofon

Co van Ledden Hulsebosch Center
Amsterdam Center for Forensic Science and Medicine

The forensic photos in this folder are used with permission of the Netherlands Forensic Institute (source: NFI Beeldbank). The name of the institute and associated images are used with permission of the van Ledden Hulsebosch family.

June 2015
INTRODUCTION

Maurice Aalders and Arian van Asten
with contributions of Rick van Rijn, Roelof-Jan Oostra, Liesbeth Smits, Peter Schoenmakers, Ate Kloosterman, Pim de Voogt, Karla de Bruin, Zeno Geradts, Marcel Worring, Marjan Sjerps, Bert van Es, Chris de Koster, Pernette Verschure, Laura Font, Gareth Davies and Christianne de Poot

On September 13th, 2013, the Co van Ledden Hulsebosch Center (CLHC), Amsterdam Center for Forensic Science and Medicine, officially started as an interdisciplinary center of the University of Amsterdam (UvA). The CLHC is the result of a collaboration of the Faculty of Science (FNWI), the Academic Medical Center (AMC) and the Netherlands Forensic Institute (NFI) in an effort to create a substantial forensic scientific program in Amsterdam and the Netherlands. In 2014 a significant amount of work was undertaken to further strengthen the CLHC in terms of organizational structure, forensic science program (i.e. expanding the project portfolio and special chairs in forensic science in the participating institutes), the national and international network, CLHC awareness with the general public and contribution to the Forensic Master program within the Institute for Interdisciplinary Studies (IIS). These efforts resulted in a unique nationally and internationally acknowledged expertise center.

This CLHC annual report presents all significant results achieved in 2014 and builds on the first annual report that was published in June 2014. The report provides a general overview and institute highlights, detailed results at institute level are available on request. In this way a comprehensive overview is presented illustrating the overall progress in forensic science in Amsterdam. The institute results have been provided by the corresponding CLHC coordinators who are listed as co-authors in the report.
ORGANIZATION

In 2013 the CLHC organization was formalized and the structure and management of the center were agreed on and documented in “Startdocument voor de oprichting van het Co van Ledden Hulsebosch Centrum, Amsterdam Center for Forensic Science and Medicine” and “Huishoudelijk reglement Stuurgroep CLHC” (in Dutch only). In these documents the foundation, aims and research strategy of the center are described including the organizational setup. The CLHC is a virtual organization that has minimal overhead and expenses. The CLHC is physically located in room C2.243 (Building 904, Science Park) within the Van ’t Hoff Institute for Molecular Sciences (HIMS) of the Faculty of Science. The center is led by two directors, Professor Maurice Aalders on behalf of the AMC and Professor Arian van Asten on behalf of the Faculty of Science. The CLHC directors report to the CLHC steering group which consists of two members of the founding organizations (FNWI, AMC and NFI). The steering group/board of the institute reports on the progress to the dean of the Faculty of Science and the general director of the AMC. The CLHC is seen as a UvA institute with the NFI as key stakeholder and participant. For all participating institutes in the center one, preferably two coordinators are appointed that serve as first points of contact for the CLHC board and the scientists in the institute. Ideally, the two points of contact include a special chair in forensic science in the institute and a scientist from the core science area. The coordinators usually directly participate in forensic research and education in their field of expertise and actively assist in building the CLHC and forensic science in Amsterdam. The next level within the CLHC is formed by the PhD students who work on forensic science projects in the institutes, their work forms the basis of the CLHC output and success. By connecting across the institutes the PhD students can work on novel interdisciplinary projects in forensic science and can assist each other to improve the quality and relevance of the forensic studies even further. For this reason the CLHC organized a forensic PhD symposium on the 24th of October 2014 at Science Park. The event was a great success with many forensic PhD students presenting their work, resulting in a lot of interaction and exchange of ideas. The forensic PhD symposium will therefore be organized as an annual event within the CLHC. An extra effort was made to invite Dutch scientists and PhD students that are involved in forensic science outside Amsterdam, i.e. at other universities or knowledge institutes. This group forms the 3rd level in the forensic network. By involving experts and scientists with no direct connection to the CLHC the options for forensic research are further increased and allow for projects for which the core scientific expertise lies outside Science Park. In this way the CLHC also contributes to the growth and development of forensic science in the Netherlands.

In 2014 the directors reported to the CLHC Steering Group in two meetings (May 28 and November 13). A CLHC coordinator meeting was held on January 31st. The CLHC board visited all institute directors and the dean of the Faculty of Science to obtain feedback and directions on the program.
Currently most positions within the CLHC organization are filled and the following AMC, UvA and NFI colleagues played an important role in the center in 2014:

Dean FNWI: Karen Maex
Chairman AMC: Marcel Levi
General director NFI: Reinout Woittiez (key stake holder)
Board members – AMC: Ton van Leeuwen (AMC Chair), Jaap Stoker
Board members – FNWI: Jan Wiegerinck (FNWI Chair), Joost Reek/Marcel Bartels
Board members – NFI: Wim van Geloven, Marcel van der Steen
Board Advisor – AMC: Agita Sanders
CLHC Director – AMC: Maurice Aalders
CLHC Director – FNWI: Arian van Asten (for 0.2 fte from NFI)
Education coordinator FNWI: Andrea Haker, Shirly Berends, Yorike Hartman
Education coordinator AMC: Rick van Rijn, Roelof-Jan Oostra
Bureau support AMC: Gepke Uiterdijk
Bureau support FNWI: Eric Sennema
Coordination BMEPh: Maurice Aalders
Coordination RAD – AMC: Rick van Rijn
Coordination AAA – AMC: Roelof-Jan Oostra, Liesbeth Smits
Coordination HIMS – FNWI: Peter Schoenmakers, Arian van Asten
Coordination IBED – FNWI: Pim de Voogt, Ate Kloosterman
Coordination IoP – FNWI: Karla de Bruin (Daniel Bonn)
Coordination IvI – FNWI: Marcel Woring, Zeno Geradts (Maarten de Rijke)
Coordination KdVI – FNWI: Bert van Es, Marjan Sjerp
Coordination SILS – FNWI: Chris de Koster, Pernette Verschure (Eva de Rijke)
Coordination FALW-VU: Laura Font, Freek Ariese (Gareth Davies)
Coordination HvA: Christianne de Poot

The main aim of the CLHC is to establish a broad and successful forensic science program in Amsterdam, a program that will gain international recognition and attract other academic partners in the Netherlands and abroad. This program is accomplished through a matrix approach in which the center acts as an incubator and communicator. The center organizes brain storm sessions to bring forensic experts and scientists together, tries to create external funding opportunities for forensic scientific research and provides an overview of all forensic activities. The science part of the matrix is based on the knowledge and expertise in the various institutes including medical, biological and life sciences, physical and chemical sciences, mathematics, statistics, informatics and data science. By expanding the connections within the UvA to include the social and legal sciences the research portfolio could even be expanded further. The overall forensic science program and its results are actively communicated by the CLHC both internally and externally to build the forensic network and provide an overview of the overall effort. Hence the annual report contains an overview of the achievements in forensic science from the various associated institutes and research teams, details at institute level are provided in a separate annex.

Forensic science and related activities within the CLHC institutes in 2014

<table>
<thead>
<tr>
<th>Institute</th>
<th>Ongoing Projects</th>
<th>PhDs/ Postdocs</th>
<th>PhD dissertations</th>
<th>Scientific publications*</th>
<th>Scientific presentations**</th>
</tr>
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<tr>
<td>BMEPh – AMC</td>
<td>4</td>
<td>3/1</td>
<td>2</td>
<td>6</td>
<td>12</td>
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<tr>
<td>RAD – AMC</td>
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<td>3</td>
<td>1</td>
<td>12</td>
<td>3</td>
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<tr>
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<td>1</td>
<td>4</td>
<td>4</td>
<td></td>
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<tr>
<td>HIMS</td>
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<td>2</td>
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<tr>
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<td>11</td>
<td>5</td>
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<tr>
<td>IoP</td>
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<td>2</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>M</td>
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<td>2</td>
<td></td>
<td>10</td>
<td>17</td>
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<tr>
<td>KdVI</td>
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<td>6</td>
<td>1</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>SILS</td>
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<td>0/1</td>
<td>2</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>FALW-VU</td>
<td>3</td>
<td>4/2</td>
<td>1</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>HvA</td>
<td>3</td>
<td>3</td>
<td></td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>34/4</td>
<td>6</td>
<td>74</td>
<td>87</td>
</tr>
</tbody>
</table>

* Publications that appeared in a printed volume in 2014 (i.e. full reference available) in peer-reviewed scientific journals (including books and book chapters with ISBN numbers)
** Scientific key note, invited speaker or accepted abstract presentations in official symposia and conferences (excluding workshops and internal UvA events)
*** Some projects are inter-disciplinary involving multiple institutes, for each institute all projects have been counted leading to a number greater than 29.
An important building block for the forensic program in Amsterdam is the realization of special chairs for relevant forensic science areas. These chairs literally connect the forensic and academic world and the appointed professors form natural focal points from which new initiatives can be undertaken and project proposals can be submitted. In 2014 two official appointments were realized. On July 1st Rick van Rijn (AMC/NFI) was appointed on a special chair in forensic (pediatric) radiology and on September 1st Zeno Geradts (NFI) was appointed professor in forensic data science within the Informatics Institute.

With these new appointments a total of 6 special chairs in Forensic Science are currently operating within the CLHC:

- Forensic Biology @ IBED/FNWI – Prof. dr Ate Kloosterman – 2013-2017
- Forensic Statistics @ KdVI/FNWI – Prof. dr Marjan Sjerps – 2010-2015
- Forensic Analytical Chemistry @ HIMS/FNWI – Prof. dr Arian van Asten – 2012-2017
- Forensic Biophysics @ BMEF/AMC – Prof. dr Maurice Aalders – 2012-2017
- Forensic Radiology @ AMC – Prof. dr Rick van Rijn – 2014-2019
- Forensic Data Science @ ivi/FNWI – Prof. dr Zeno Geradts – 2014-2019

In 2014 in total 6 PhD students defended their forensic science thesis successfully:

- Jeroen van den Bos @ CWI/NFI - January 9th, 2015
- Gerda Edelman @ AMC/BMEF – April 15th, 2014
- Tessa Sieswerda @ AMC/Radiology – May 9th, 2014
- Hanneke Brust @ HIMS/NFI – June 25th, 2014
- Annemieke van Dam @ AMC/Radiology – September 19th, 2014
- Alexander Lindenbergh @ IBED/NFI – November 20th, 2014

EDUCATION

The CLHC actively supports the Forensic Master program organized and coordinated by the Institute for Interdisciplinary Studies (IIS). The coordinators of the program meet regularly with the CLHC Directors and take part in the CLHC coordinator meetings. In 2014 the CLHC website was expanded to provide information to the students on interesting options for literature theses and research projects. For the academic year 2014-2015 the literature thesis in the 2nd year of the Forensic Science master was fully coordinated from the CLHC (course coordinator : prof. dr Arian van Asten) thereby making full use of the forensic network including CLHC coordinators and PhD students. Additionally, the CLHC wants to ensure that forensic scientific talent is given maximum opportunity to continue their career in forensic science through PhD projects that emerge from the CLHC program. To further immerse the students in the forensic science program in Amsterdam they were invited to attend the CLHC PhD symposium. The students also need to attend the jointly organized Frontiers of Forensic Science (FFS) sessions. The FFS sessions are part of the Forensic Master program but are open to scientists, forensic experts and all with a forensic interest. The CLHC maintains an extensive contact list from the science, forensic and criminal justice communities and each FFS session is announced to these contacts. Consequently, attendance is high (60-100+) and diverse and provides excellent opportunities for the students to meet forensic and scientific experts, police officers and legal professionals.

In 2014 in total five sessions were organized (three within the academic year 2013-2014 and two within the academic year 2014-2015):

- Wildlife Forensics on February 8th, 2014
- Blood and Beyond on April 5th, 2014
- Forensic Visualization on June 6th, 2014
- New dimensions in Forensic Fingermark Investigation on October 10th, 2014
- Forensic Intelligence on December 12th, 2014
The master program in Forensic Science as coordinated by the IIS strongly relies on forensic expert input from the institutes and scientists linked to the CLHC. In the academic year 2013-2014, many CLHC associated courses and CLHC associated teachers (often CLHC coordinators) were involved in the Forensic Master curriculum. The CLHC institutes also play an important role in providing interesting and challenging research project assignments for the Forensic Science master students during their 2nd year of the master. In the academic year 2013-2014, most students successfully concluded their literature thesis and their research project at CLHC associated institutes. Finally, a significant forensic science effort is also undertaken for bachelor and master students in other areas when they have an interest in forensic science.

Forensic science and criminal investigations usually attract a lot of attention from the general public and the media. Hence, a successful forensic science program within the University of Amsterdam can also be used to get society involved and interested in science and the activities of the university. This in turn can attract new generations of talented students to Amsterdam. As the CLHC represents and coordinates the forensic science efforts at the UvA, the center is expected to create several opportunities each year for promoting science and interacting with the general public. This includes forensic science presentations for a broad audience, articles in newspapers and popular scientific magazines and contributions on the Internet and television. In the beginning of 2014 Professor Maurice Aalders gave a number of video lectures on forensic science in the popular “Universiteit van Nederland” series (http://www.universiteitvannederland.nl), an initiative from Alexander Klöpping that generated national attention and interest in science. Both CLHC board members also gave a workshop in forensic science within the Spui 25 format. Several interviews with CLHC coordinators and media articles appeared in 2014.

An important communication platform for internal and external use is the CLHC website (www.clhc.nl). In 2014 significant progress was made in developing the website into a dynamic center for forensic information. With Ineke Weijer from HIMS as new CLHC web editor, the CLHC is able to quickly process news items as provided by all the partners in the institute. The website is an important platform for students looking for topics and opportunities for their literature thesis assignment and research project. Such topics can be offered via the website by NFI experts and UvA and external scientists. However, the website also offers interesting information for the general public and those with an interest in forensic science. With the aid of the grandson who bears the same name as his famous grandfather, information and material on the work and life of Dutch forensic pioneer Co van Ledden Hulsebosch can be found on the website. In 2014 his memoirs “40 Jaren Speurderwerk” (“40 Years of Detective Work”) was digitized and made available as download from the CLHC website. In the future more unique historical material related to Co van Ledden Hulsebosch and the history of forensic science in the Netherlands will appear on the CLHC website.
In 2014 the CLHC sponsored and attended an international forensic conference to build awareness of the center within the international forensic community. The ICFIS 2014 on forensic statistics in Leiden offered an ideal platform and for this event a new folder and two CLHC banners were developed, providing the center with presentation material for national and international events. In 2015 the international forensic network will be further developed by sponsoring and attending the EAFS 2015 conference in Prague, the largest European conference on forensic science usually attended by over 1000 forensic experts from across the globe. The CLHC will also undertake attempts to form an international world-wide network with all leading forensic academic institutes.
FINANCIAL

The CLHC maintains a modest budget for its activities. Every year all associated FNWI institutes and the AMC provide a small financial contribution which in total make up the yearly CLHC budget. The CLHC expenses are relatively small because of the virtual nature of the institute and minimal overhead involved. It should be noted that the CLHC does not fund research projects nor is directly responsible for such projects. This responsibility sits with the institutes and principal investigators. The modest CLHC means are used to create opportunities in terms of forensic research, forensic meetings and symposia and activities to increase general interest and awareness of the overall forensic science efforts in Amsterdam, both nationally and internationally. The CLHC directors discuss progress and “return on investment” on a regular basis with the institute directors.

In 2014 most expenses were associated with the first forensic PhD symposium and the sponsoring and attendance at the ICFIS symposium in Leiden. For the ICFIS conference a new international folder and two CLHC banners were prepared that can also be used for future national and international events. For the CLCH forensic PhD symposium all attendants received a special CLHC “coffee mug”.

Over 2014 total expenses were approximately 15000 euro resulting in a positive balance of roughly 25000 euro at the end of the fiscal year.

INSTITUTE HIGHLIGHTS

In a separate annex (available upon request) all significant forensic achievements in 2014 are listed in detail for every institute and associated scientists. The institute overviews have been prepared by the CLHC coordinators and illustrate the success of the matrix approach and how through multiple efforts a comprehensive forensic science program is established in Amsterdam. Highlights of 2014 are listed below.

AMC – BMEPh
- PhD dissertation “Fingermarks, more than just a ridge pattern” – Annemieke van Dam, 19-09-2014, promotors : prof. dr Aalders, prof. dr van Leeuwen, copromotor : dr Lambrechts

AMC – RAD
- Appointment of prof. dr van Rijn on a special forensic chair on “Forensic radiology with an emphasis on paediatric forensic radiology” (01-07-2014)

AMC – AAA
- Start of the PhD project “From ions and crystals to ashes and back again: forensic analysis of the destructed human body” (PhD student : Tristan Krap, Promotor : prof. dr Roelof-Jan Oostra and co-promotor : Dr. Wilma Duijst)
- The AMC Spinoza Chair was granted to Prof Dr Maryna Steyn, professor of Physical and Forensic Anthropology and Director of the Forensic Anthropology Research Centre at the University of Pretoria, South Africa.
FNWI – HIMS
- PhD dissertation “Chemical profiling of explosives” – Hanneke Brust, 25-06-2014, promotores: prof. dr Schoenmakers and prof. dr van Asten
- Prof. dr van Asten gave an invited talk entitled “Versatile analytical strategies for forensic chemical profiling of explosives” at the Pittcon conference in Chicago in March 2014

FNWI – IBED
- A new course was developed and introduced in collaboration with SILS for the Forensic Science Master: Advanced Forensic Biology (Lecturers: dr Verschure, dr Jonker and prof. dr Kloosterman)

FNWI – IoP
- TEDx Amsterdam talk on BPA research by Nick Laan (coauthors: dr de Bruin and prof. dr Bonn) entitled “Better than Dexter” (28-11-2014)

FNWI – KdVI
- Organization of the 9th International Conference on Forensic Inference and Statistics in Leiden, held from August 19-22, 2014 (www.icfis2014.org) by prof. dr Sierps and prof. dr Berger (University of Leiden)

FNWI – SILS
- Green Forensics researcher dr de Rijke was a finalist for the Amsterdam Science and Innovation Award on June 5th, 2014.
- An NCTV “Veilig door Innovatie” grant for a 2 year Postdoc project was obtained for the SILS/IBED/NFI proposal Development of a DNA methylation age calculator (supervisors: dr Verschure and prof. dr Kloosterman)

VU – FALW
- The paper in Science and Justice by dr Font entitled “Provenancing of unidentified World War II casualties: application of strontium and oxygen isotope analysis in tooth enamel” was the Editor’s choice for promotion of the FIRMS SI

HvA
- PhD students Madeleine de Gruiter (“Back to the start. Visual attention of scene of crime officers during their exploratory round”) and Anna Mapes (“The impact of mobile DNA-technologies at the crime scene”) presented results of their PhD studies at the 66th American Academy of Forensic Sciences Annual Scientific Meeting in Seattle in February 2014.
- PhD students Claire van den Eeden and Madeleine de Gruiter received “research grants from the University of Portsmouth” for visiting PhD students of the International Centre for Research in Forensic Psychology
Although the forensic science efforts in the participating institutes form the backbone of the CLHC, the center is also a focal point for interdisciplinary initiatives and projects. At the interface of science areas creative and novel new forensic proposals can emerge. Interdisciplinary projects involving forensic medicine and forensic science are especially promising and powerful as they make use of the unique collaboration within the CLHC. Forensic science concepts such as Green Forensics, Wildlife Forensics, (Forensic) Science for Art and Bayesian methods for peak detection have been developed in Amsterdam and introduced in new areas outside the traditional criminal justice system.
CONCLUDING REMARKS

In 2014, the CLHC has successfully established a forensic science platform in Amsterdam. Its activities have resulted in a substantial and successful forensic science program. The matrix approach has been an effective instrument to cover the broad range of expertise areas and science domains that are of importance in forensic science. This effort is unique in the Netherlands and supports the quality of the forensic science master program of IIS. Initial steps have been undertaken to make the CLHC known internationally and to build an international network of academic forensic science institutes. These efforts could lead to a global forensic science program in which the CLHC has a substantial role and participates in international projects and student exchange programs. Because of the success and the excellent prospects the CLHC strives to continue and further develop the FNWi-AMC-NFI collaboration in forensic science and to support and strengthen the forensic scientific community both on a national and international level.