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Summer School 2

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Abstract

The second HyMedPoly Summer School was held at Eurescom GmbH in Heidelberg in November 2016 as a continuation of the training on best practices in managing collaborative R&D projects with a focus of forming good project teams.

Additionally a workshop demonstrating insertion of a Central Venous Catheter and discussing the issues faced by clinicians in ensuring infection free operation was presented.

The Mid-Term Review, run before the Summer School, also gave training experience to the ESRs through their participation in the meeting sessions

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Executive Summary

HyMedPoly aims to develop new therapies based on biomedical polymers and inorganic materials.

The second HyMedPoly Summer School held at Eurescom GmbH in Heidelberg on 11 November 2016 was attended by all 15 Early Stage Researchers (ESRs) engaged on HyMedPoly. The school run by Eurescom GmbH focused on the criteria for creating effective project teams as part of the continuing training in best practices for managing collaborative R&D. The training was delivered through a series of presentations followed by a practical exercise on effective communication.

The Summer School, was followed by a workshop by Dr Jochen Salber, Knappschaftskrankenhaus, Bochum, in which he demonstrated insertion of a Central Venous Catheter. The session introduced the ESRs and partner representatives to the issues faced by clinicians in ensuring infection free operations. The workshop presentation will be built on in future HyMedPoly training events.

The ESRs also received practical training in presentation skills and in chairing meetings by participation in the project review meetings that were run during the two days before the Summer School. The meetings were also an opportunity to broaden their technical knowledge of the project.

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1 Introduction

1.1 The HyMedPoly Project

Infection has become one of the toughest problems in the medical world and as bacteria become more resistant to drugs there are fewer effective antibiotics to fight against pathogens.

HyMedPoly is developing new therapies based on intrinsically antibacterial polymers, polymer composites with inorganic materials and polymers with antibacterial additives for the production of drug-free antibacterial hybrid biopolymers as therapeutic materials to prevent, control and remove infections.

Our ultimate goals are to develop a new generation of professionals who will play a pivotal role in pushing forward this challenging and knowledge-intensive field for the coming decades to benefit the European economy and who will be able to bring state-of-the-art technology to industry, advance products for hospitals and personal healthcare, and develop new and improved therapeutic strategies.

The HyMedPoly team has recruited a cohort of fifteen Early Stage Researchers (ESRs) to work with a group of nine universities and companies to:

- Validate the new materials concepts and determine key design parameters that will guide the development of families of novel therapeutic hybrid polymers to combat bacteria-related infection.

- Study industrial processing techniques to fabricate the medical materials and product demonstrators.

- Undertake a comprehensive and innovative training programme to meet industrial demands for fully rounded professional researchers.

Appendix 1 gives more details of the project group and the research projects supported.

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1.2 HyMedPoly Summer Schools and Workshops

Summer schools and workshops are a key element of the training activities of HyMedPoly and are planned to take place approximately every six months, providing training both in the science of antimicrobial materials development, application and qualification, and in skills for business. The scientific training programme aims to balance aspects of basic and applied research to combine an appreciation of industry needs with an understanding of the underlying science. The skills for business training provides the Early Stage Researchers (ESRs) with an understanding of the wider issues needed to manage technical projects effectively.

These meetings of the HyMedPoly group also provide an opportunity to progress the project's technical activities. The researchers share results and seek guidance through presentations and discussions with the project partners, the Supervisory Board meets to discuss project management issues and the cohort of ESRs network and discuss general project issues.

The training programme has been revised from that originally proposed due to logistics issues. Summer School 2 was run at Eurescom's offices in Heidelberg, Germany, rather than at the University of Erlangen-Nuremberg as originally planned. It concentrated on forming project teams as part of the module "Best practices in managing collaborative R&D".

As a consequence of the revision, Summer School 3 will be run at University of Erlangen-Nuremberg rather than at Eurescom as originally envisaged in Q3 2017. The school will present the science session "Hybrid materials development and processing technology" in addition to the originally planned session "Product development and regulation". The revision will not affect the delivery of the project activities. The revised timetable is shown in Table 1, below.

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Table 1: HyMedPoly Summer Schools and Workshops – Revision 1

	Main Training Events & Conferences	Lead Institution	Project Month (*estimated*)
1	Summer school 1: Science: Biodegradable polymers synthesis and functionalization Industry Training I: Regulations for medical products Industry Training II: Best practices in managing collaborative R&D projects – communication and knowledge management	PTO (Italy) EUR (DE)	12
2	Workshop 1 – scientific meeting of the network: new concept of drug-free antibacterial therapies	UoW (UK)	17
3	Summer School 2: Industry Training III: Best practices in managing collaborative R&D projects – forming good project teams	EUR (DE)	21
4	Workshop 2 – scientific meeting of the network: Drug-free antibacterial hybrid polymers and clinical aspects	IK4 (ES)	27
5	Summer School 3: Science: Hybrid materials development and processing technology Science: Product development and regulations Case studies (including preclinical) Industry Training IV: Best practices in managing collaborative R&D projects – dissemination and exploitation	FAU (DE) EUR (DE)	34
6	Workshop 3 – scientific meeting of the network: From science to products: business plan/meeting with investors, start-ups and blue chips and exhibition of HyMedPoly outcomes	Vn (IE)	39
7	International School and Conference –drug-free antibacterial technology for medical applications	Luci (UK)	45

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2 The Second HyMedPoly Summer School

The second Summer School was held on 11 November 2016

Figure 1 The HyMedPoly ESRs and Partner Representatives with the EC Project Officer and Technical Expert outside Eurescom's Offices.

Organisation and delivery of Unit 3 of the HyMedPoly Industrial Training programme was by Eurescom. The unit outlined best practices in managing collaborative R&D projects focusing on forming good project teams.

Figure 2 Best practices in managing collaborative R&D projects session

The 3 hour training session was facilitated by Milon Gupta to all 15 Early Stage Researchers (ESRs) employed on the HyMedPoly project in a class room setting.

The facilitator discussed the criteria which constitute an effective team and shared five major elements that help forming good teams. He then explored Belbin's 9 team roles with the ESRs and explained how understanding these roles can help to build a team with the right combination of personal qualities to increase its effectiveness and maximise its operation.

A practical exercise on effective communication then highlighted the importance of clear and open communication as well as unbiased listening between team members.

The ESRs expressed their satisfaction with the training at the end, and suggested that the whole project team should participate in such training activities, in order for everyone to benefit from the insights gained at the training. This suggestion was then discussed at the plenary meeting of the project team, which followed the training session.

Following the Summer School, Dr Jochen Salber, Knappschaftskrankenhaus, Bochum, ran a workshop demonstrating insertion of a Central Venous Catheter into a patient with an aid used to train doctors.

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Figure 3 Workshop demonstrating insertion of a Central Venous Catheter into a patient

The session was to introduce the ESRs and partner representatives to the issues faced by clinicians in ensuring infection free operation and highlight areas where intrinsically antibacterial materials could alleviate the situation. The issues highlighted in the workshop presentation will be expanded in future HyMedPoly workshops and summer schools to raise the ESRs awareness of clinical needs.

Figures 4 and 5 Demonstrating the insertion of a Central Venous Catheter

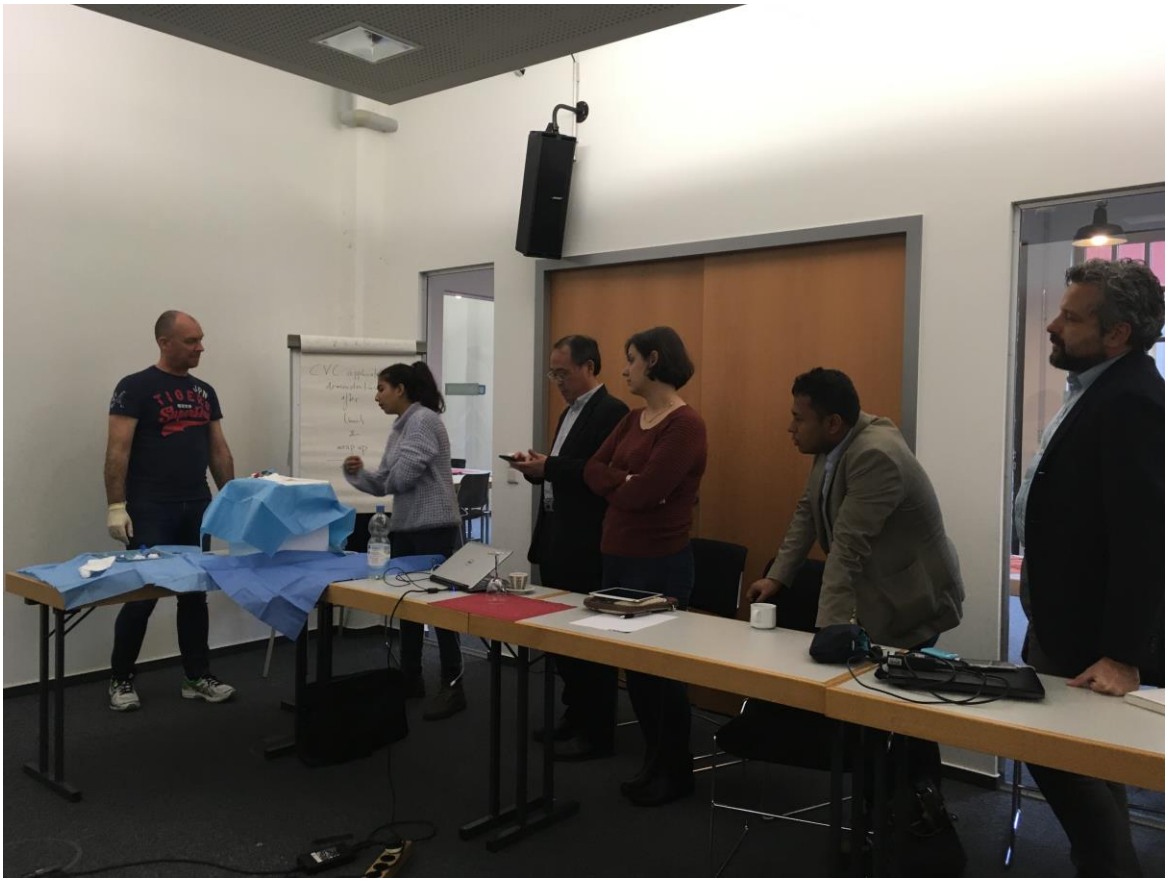

Figure 6 Scientific discussion at the Workshop demonstrating a Central Venous Catheter

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3 Training though other HyMedPoly Activities during the Meeting

The Summer School was run after the Mid-Term Review, which is reported separately in report D6.14 and contained inherent training experience to the ESRs through their participation in the meeting sessions

The meeting comprised of a full day Internal Project Review Meeting (9 November 2016) at which the project partners and ESRs reviewed the progress of each of the research projects and prepared for the Mid-Term Review meeting.

The formal Mid-Term Review meeting was then held on the following day with the Project Officer and the appointed Technical Officer as representatives of the Research Executive Agency (REA) of the European Commission. The meeting reviewed project progress at the project's mid-point with representatives of each project partner and the ESRs present.

The meeting's structure followed that recommended in the informal guidelines for the Mid-Term meeting issued for H2020 Marie Skłodowska Curie Innovative Training Networks. The full day review meeting included:

- A Coordinator's Report
- Researchers' Individual Reports
- Meeting between the ESRs and the REA Representatives
- Meeting between the Project Partners and REA Representatives
- Feedback and Open Discussions.

The day concluded with a networking meeting of the project with speeches from the Project Manager and a networking activity aimed at encouraging the individuals to form an effective working group.

The training that the ESRs received by participation in the review included:

- Practice in presenting a coherent summary of their work

  Each ESR gave a 10 minute Power Point presentation outlining:

  - Personal Profile and Background
  - Objectives of their project
  - Methodology
  - Main Results
  - Training Experience
  - Expected Project Impact.

- Experience in chairing technical sessions

  Four of the ESRs volunteered to chair the sessions in which their fellow ESRs presented their project overviews. The chairs managed the timing of the session and the question and answer sessions at the end of each presentation.

The opportunity to chair sessions will be extended to further project reviews to enable all ESRs to gain experience.

- Broader understanding of the HyMedPoly as a whole through the Scientific Co-ordinator's and Project Manager's summary reports and of the objectives and achievements of the other research projects through the ESR summary presentations.

Figure 7 The Mid-Term Review Meeting

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Appendix 1 – The HyMedPoly Project Group and Research Projects

HyMedPoly aims to develop new therapies based on biomedical polymers and inorganic materials. The nine universities and companies from across Europe shown in Table 1 are creating a cohort of 15 European Industrial Doctorates. The projects, detailed in Table 2, are to synthesise new biopolymers with added antibacterial functionality and develop functionalised bioactive ceramics and glasses that can act as active agents to kill bacteria and prevent their growth.

The new material systems from HyMedPoly are aimed at applications such as wound care, implants and bio film prevention.

Table 1.1: The HyMedPoly Consortium Members

Consortium Member		Legal Entity Short Name
Beneficiaries		
1.	Lucideon	Lucid
2.	University of Westminster	UoW
3.	Politecnico di Torino	Polito
4.	University of Erlangen-Nuremberg	FAU
5.	Vornia	Vornia
6.	University of Southampton	Soton
7.	Knappschafts-Hospital Bochum GmbH	KHB
Partner Organisations		
8.	IK4 Tekniker	IK4
9.	Eurescom	EUR

Table 1.2: The HyMedPoly Research Projects

ESR	Project Title	Researcher	Academic Host	Non Academic Host
1	Degradable Antibacterial Polyesters and Composites	Jeddah Marie Vasquez	Polito	Vornia
2	Design and Engineering of Therapeutic Polyurethanes	Subha Purkayastha	Polito	Vornia
3	Bioresorbable Antibacterial Polyesters	Lukas Gritsch	FAU	Lucid
4	Biodegradable and Bioresorbable Polyesters	Binh Thi Thanh Phan	FAU	Lucid
5	Novel Antibacterial Natural Polymers	Elena Marcello	UoW	Vornia
6	Hydrogel Based Hybrid Antibacterial Polymers	Isabel Orlando	UoW	Vornia
7	Bioactive Silica Glass	Seray Kaya	FAU	Lucid
8	Substituted Hydroxyapatite	Muhammad Maqbool	FAU	Lucid
9	Bioactive Phosphate Glass	Agata Łapa	FAU	Lucid
10	Innovative Antibacterial Polymers	Alexandra Paxinou	UoW	KHB
11	Antibacterial Materials For Tissue Engineering Scaffolds	Sheila Piarali	UoW	KHB
12	Mechanobiology of Cell-Surface Interaction	Faezeh Shalchy	Soton	Lucid
13	Mechanics of Porous and Structured Materials	Loris Domincale	Soton	Lucid
14	In-vitro Bio-evaluation of Antibacterial Polymers	Ayesha Idrees	Polito	KHB
15	Antibacterial Testing of Polymers	Patricia Valera	Polito	KHB

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