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# **DITOs**

# **Doing It Together science**

Coordination & Support Action

# **D1.2 Biodesign Engagement and Support**

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# 1 Version Log

Version	Date	Released by	Nature of Change	
Draft	18/07/2017	Imane Baïz (UPD)	First version of the document	
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# 2 Definitions and Acronyms

Acronyms	Definitions
BD	biodesign
CS	Citizen Science
CSA	Coordination and Support Action
DIT	Doing It Together
DITOs	Doing It Together science
DIY	Do It Yourself
EC	European Commission
ECSA	European Citizen Science Association / Verein der Europäischen Bürgerwissenschaften
ES	Environmental Sustainability
EUTEMA	EUTEMA GMBH
H2020	Horizon 2020 Programme
GA	Grant Agreement
KI	Kersnikova Institute
KPI	Key Performance Indicator
Meritum	Centrum Szkolen I Rozwoju Osobistego Meritum
моос	Massive Online Course
MP	Medialab Prado, Madrid
RBINS	Institut Royal des Sciences Naturelles de Belgique
RRI	Responsible Research and Innovation
SC	Science Cafe
Tekiu	Tekiu Limited
UCL	University College London
UNIGE	Université de Genève
UPD	Université Paris Descartes
ws	Waag Society

# 3 Executive summary

This report covers biodesign events from the Doing It Together science (DITOs) action that were executed by DITOs consortium partners from month 1 to month 13 inclusive (June 2016 - June 2017).

During this period, the consortium completed a total of 117 biodesign events and activities ranging from one-off workshops for 10-20 people to large-scale exhibitions and conferences attended by hundreds.

These events are an important part of the citizen science Coordination and Support Action (CSA), serving to build collaborations between grassroots communities, institutions and industry. During the 13-month period, the consortium members partnered with 91 different organisations and reached approximately 6500 individuals.

As well as collecting figures for quantitative evaluation and attendees' and facilitators' feedback for qualitative evaluation (both of which are covered in Deliverable 5.2 'Phases 1 & 2 Project Evaluation'), the consortium event facilitators have been collecting event 'stories' – snapshots of individual events to portray the status quo of citizen science dissemination and development within the biodesign theme. A representative collection of these are written up as 'success stories' within this document; notable examples were:

- The 'Bio Friday Academy' series of workshops run by the Kersnikova Institute in Slovenia, which introduced groups of children to DIY citizen science projects and principles;
- The 'Biodesign NightScience meets iGamer' conference run by UPD in France, where hundreds of students and scientific professionals worked alongside families and children to develop and improve bioscience gaming prototypes;
- The 'Biodesign Café' run my Meritum in Poland, where 600+ members of the public were encouraged to download citizen science apps by university scientists.

Alongside the many successes of the action, there have been two technical issues with the readiness of online apps to support planned workshops – these are being resolved and though they have had a short term impact on achievements, it is not envisaged that there will be any long term issue.

Partners have also started to develop online resources from descriptive blogs and 'beginner level' at home experiments which raise general citizen science awareness to detailed instructables and massive online courses (MOOCs) to engage more experienced DIY scientists.

The 'Biodesign Engagement and Support' report is Deliverable 1.2 (D1.2) from the DITOs CSA, Grant Agreement (GA) 709443.

## 4 Introduction

This report summarises the activities organised and supported in Phases 1 & 2 of the DITOs project up to month 13.<sup>1</sup> The deliverable has used the evaluation templates and data processed within WP5. The information about events was gathered through the DITOs web platform (<a href="http://togetherscience.eu">http://togetherscience.eu</a>) developed for WP3. The backend of the webpage was designed to gather all these data from partners to streamline analysis and evaluation of the activities. The data used in this report was exported from the website on 17 July 2017.

The summary of activities is presented as a set of tables. The first table provides an overview of the number of activities, participants and collaborations per type of activity during the first 13 months of DITOs. The second table shows the number of events per type and partner.

The next section splits the data by type of activity (Interactive & travelling exhibitions, Conferences / Seminars, Gaming competitions / Online engagement, Discussions / debates at Science public cafés and public screenings, DIY & DIT Workshops). The table shows the names of the activities organised by each partner and indicates the number of participants and the different organisations that each partner collaborated with in order to deliver the events. Collaboration is a key issue for DITOs for integrating different perspectives and sectors of society.

In addition to the quantitative tables, the deliverable also illustrates the experience behind the numbers: each partner has selected one or several activities they organised, and highlighted the features unique to that event through a series of Success Stories. These descriptions provide a rich personal perspective of the events and are essential to sharing best practices among event organisers.

The report finishes with a description of the online resources (videos, data sets, blog posts, guidelines,) that were published and are accessible through the DITOs online portal. Each partner provides a short summary of their online resources including online repositories (instructables, code, videos) and social media accounts they have used to disseminate information from events. The complete list of resources is detailed in Section 6 Online resources

This document has been written in parallel with D2.2 and uses the same methodology. Since some explanations apply to both deliverables, some pieces of texts are reproduced in both deliverables to ensure that each report could be read independently.

# 5 Summary of the events organised and supported

This report follows the structure of Table 2.2 in the Grant Agreement ('Events and expected participants numbers in biodesign activities'), see Figure 1, as well as the categories in the evaluation templates developed in WP5.

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<sup>&</sup>lt;sup>1</sup> To allow adequate time for writing and review carried out in months 14-15, the reporting period comprises activities until month 13, not month 15 as stated in the Grant Agreement.

Table 2.2 - Events and expected participants numbers in Biodesign activities (WP1)

Phases						
Activity type	Events in Phase 1 M1-M6, (No. of events) Partner	Events in Phase 2 M7-M24, (No. of events) Partner	Events in Phase 3 M25-M36, (No. of events) Partner	Planned (Events Participants)		
Interactive & travelling exhibitions	BioArt (1) KERSNIKOVA	BioArt (3) KERSNIKOVA	BioArt (2) KERSNIKOVA	6 3,000		
Conference/ Seminars	Biodesign Nightscience (1) UPD	Biodesign Nightscience (1) UPD Perspectives on DIYBio (1) UNIGE	Biodesign Nightscience (1) UPD	4 1000		
Gaming competitions / Online engagement	Igame4er (1) UPD MOOC (1) UPD Gameliers (2) UPD CityHacking (1) MERITUM CRI Journal (1) UPD Workshop Lab Books (1) KERSNIKOVA	Igame4er (1) UPD MOOC (1) UPD Gameliers (6) UPD CRI Journal (1) UPD Workshop Lab Books (1) KERSNIKOVA DIY Science Postcards (1) UNIGE	Igame4er (1) UPD MOOC (1) UPD Gameliers (6) UPD CRI Journal (1) UPD Workshop Lab Books (1) KERSNIKOVA DIY Science Postcards (1) UNIGE	29 27,000		
	DIY Science Postcards (1) UNIGE					
& Public Screenings	CwB BioCafé (1) UCL BioTalks (1) KERSNIKOVA Biodesign Café (1) MERITUM OpenLabEvening (6) WS BioNights (5) UNIGE Science Film Night (1) UCL	CwB BioCafé (1) UCL BioTalks (8) KERSNIKOVA Biodesign Café (3) MERITUM OpenLabEvening (15) WS BioNights (8) UNIGE Science Film Night (2) UCL	CwB BioCafé (1) UCL BioTalks (3) KERSNIKOVA Biodesign Café (3) MERITUM OpenLabEvening (12) WS BioNights (9) UNIGE Science Film Night (1) UCL	81 2,000		
DIY and DIT Workshops	BioDesign Workshops (1) UPD Open Science Schools (10) UPD Leadership programme (1) UPD Bio Playshop (1) UCL Bio Friday Academy (2) KERSNIKOVA	BioDesign Workshops (3) UPD Open Science Schools (10) UPD Leadership programme (1) UPD Bio Playshop (1) UCL Bio Friday Academy (10) KERSNIKOVA	BioDesign Workshops (2) UPD Open Science Schools (10) UPD Leadership programme (1) UPD Bio Playshop (2) UCL Bio Friday Academy (4) KERSNIKOVA	80 2000		
	Bio Citizen Science (1) KERSNIKOVA  Do-It-Together Bio (2) WS	Bio Citizen Science (3) KERSNIKOVA Do-It-Together Bio (8) WS OpenBio workshop (1) MP Bio Hack The City (1) MERITUM	Bio Citizen Science (1)  KERSNIKOVA  Do-It-Together Bio (2) WS  Open Bio workshop (1) MP  Bio Hack The City (1) MERITUM			
Estimated Total (Events / Participants)						

Figure 1 Table 2.2 from the GA with all the planned events and expected participants during the whole DITOs project (source: DITOs Grant Agreement [1])

While Figure 1 indicates the expected number of activities and participants, the data gathered for WP5 shows the actual numbers for these categories. The analysis that has been performed to complete the tables throughout this deliverable has taken into account only the activities carried out by partners that are related to WP1 (in the .xls 'biodesign/public') whose status in the file is set as 'Completed'. Activities that don't match both conditions have been excluded from this report. For example, some activities that started before month 13 but have not yet finished (e.g. museum exhibitions) were not taken into account for the quantitative analysis. In these cases, an effort was been made to include the events as 'Success Stories' if the activity was particularly illustrative.

It is important to highlight that Figure 1 covers the first 24 months of the project while this report covers only the first 13. Some partners have organised additional activities that were not included in the initial plan but were included in this analysis.

Table 1 provides an overview of all the activities carried out. It focuses on the number of participants reached and amount of collaborations generated during the first 13 months. The number of collaborations refers to the different organisations

collaborations2

each partner has worked with to carry out their activities. Recurring instances of the same collaboration are only counted once.

WP1 BIODESIGN	Type of activity (number of events carried out M1-M13)					
travelling Conferences / competitions  exhibitions  Conferences / competitions		Gaming competitions / Online engagement	Discussions / debates at Science public cafés and public screenings	DIY & DIT Workshops		
Number of events	3	3	9	32	70	117
Number of participants reached	870	820	720	2648	1373	6431
Number of	12	6	12	16	45	91

Table 1 Number of events, participants and collaborations per type of activity

Table 2 shows the number of activities carried out by each partner according to the activity types defined within the GA. This approach will be followed in every table throughout the whole document.

WP1 BIODESIGN	Type of activity (number of events carried out M1-M13)						
Partner	Interactive & travelling exhibitions  Conferences / Seminars  Conferences / Seminars  Gaming competitions / debates at Science public cafés and public screenings  Discussions / debates at Science public cafés and public screenings		carried out (status = completed)				
UCL	1	0	0	4	1	6	
MP	0	0	0	0	4	4	
KI	2	0	1	5	14	22	
Meritum	0	0	1	1	1	3	
UNIGE	0	2	1	10	0	13	
ws	0	0	0	12	18	30	
UPD	0	1	6	0	32	39	
Total number of events carried out	3	3	9	32	70	117	

Table 2 Number of activities per type and per partner

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<sup>&</sup>lt;sup>2</sup> "Number of collaborations" has been calculated summing, for each type of activity, the number of different agents a partner has collaborated with.

In the next part of the report, the data has been divided by type of activity to show, per partner, the name of the events, the number of participants and also the different collaborations that have taken place during these months. A guide to the classification of activity types can be found in Part B [1] of the GA (pgs. 13-14). The data is presented in Tables interspersed with Success Stories that reflect the qualitative experiences of event facilitators.

The information has been organised as follows:

- Each section focuses on one activity type: Interactive & travelling exhibitions, Conferences / Seminars, Gaming competitions / Online engagement, Discussions / Debates at Science public cafés and Public screenings, DIY & DIT Workshops.
- Each table has been divided by partner (rows). Only partners that have organised activities are shown.
- The first column is a list of all the activities carried out by a partner by the event name. If activities have been repeated under the same name, they appear thus: 'Name of activity (Number in series)'.
- The second column shows the total number of participants of the listed activities.
- The third column represents collaboration and it has been subdivided into a maximum of 6 sub-categories. Where collaborations did not occur, the relevant sub-categories were removed to reduce table size and facilitate reading. The 6 sub-categories are as follows:
  - o NGOs: Non-Governmental Organisations.
  - DIY & local communities: citizens, grassroots associations that are not NGOs and do not belong to the rest of categories.
  - o *Education, Academia and Research:* this includes public and private universities, schools, research centres, etc.
  - Local & national government: this category includes every public institution that have collaborated somehow in one or more events such a ministry or a local council.
  - Industry, Company & Startups: any institution, public or private, focused on production of goods and services that are usually profit entities.
  - Other: this covers any collaboration that does not fit into the other five categories. An example is a professional actress that supports the activity but cannot be considered directly part of a community devoted to citizen science.

Between the tables, one or more examples of *Success Stories* are provided. The selected events and the text of each story have been chosen and written directly by each partner to reflect and champion different perspectives. Each story has been left

unedited to accurately capture the facilitator's voice and highlight the personal insights gained during these noteworthy activities.

# 5.1 Interactive and travelling exhibitions

Interactive & travelling exhibitions raise public awareness about current research, issues affecting our societies, expose them to various approaches and possible answers to these issues while inviting them to consider the roles they can play in science and technology. [1]

Table 3 : Interactive and travelling exhibitions events. It shows the name of events, public reached and agents that have been collaborating with partners to carry them out.

WP1 BIODESIGN	Activities name (number of	Number of	Collaboration					Collaboration	
Partner	events of same activity) <sup>3</sup>	public reached	NGOs  DIY & local Academia & Industry, Compa & Startups  Research						
UCL	Science has no Borders - Unwrapped!	150	KI; Meritum; WS; Ignite Futures	MP; Public Laboratory for Open Technology	Royal College of Arts ; Bioscope ; UPD				
КІ	Et In Arcadia Ego;  Maja Smrekar: 'ARTE_mis'	720			National Institute of Chemistry in Ljubljana	Kambič Laboratory Equipment, Iskra Pio, Domel			

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 $<sup>^{3}</sup>$  The activities in bold are the ones that are illustrated by a 'Success Story' in this report

#### 5.1.1 Success stories

UCL	Cindy Regalado	London, 26/09/2016			
Science has no Borders - Unwrapped!					
http://togetherscience.eu/x/1x1y452					



Figure 2 UCL, Science has no Borders - Unwrapped! exhibition - Photo credits: Imane Baïz

"Science has no Borders: Unwrapped! is about co-creating purposeful technology that enriches our culture, and our relationship to the world around us. The exhibition also included a series of inspiring talks. Amongst the speakers was Adam Timlett who talked about his personal journey into the study of 'Complexity' and how it relates to art and the study of history, and how scientists and society can benefit from complexity research. There was also an exhibition stand that we set up to showcase the glass art on large screens, as well as showing interactive examples of complexity science. There were a host of other organisations including the Public Laboratory for Open Technology, Waag Society, the Center for Research and Interdisciplinarity Paris, MediaLab Prado, Bioscope, Kersnikova Institute, Royal College of Art researchers and Ignite Futures. We had some really interesting conversations and the turnout was much bigger than expected with plenty of interdisciplinary researchers and practitioners, scientists, businesspeople and academics attending."

Cindy Regalado

KI	Simon Gmajner	Ljubljana, 03/2016 - 04/2017, 2 months			
Maja Smrekar: 'ARTE_mis'					
http://togetherscience.eu/x/1wm15of					



Figure 3 KI, Maja Smrekar: 'ARTE\_mis' exhibition - Photo credits: Miha Fras

"The 'ARTE\_mis' exhibition, which was part of the Maja's K-9\_topology opus, showcased the potentials of biotechnology and hybridisation of human species with a 'non-human other'. The focal point of the exhibition was a hybrid cell of human and dog that is placed in a gallery setting as an art artefact, but also as a new potential life form. The hybrid cell is a dystopian scenario but which could also create a new species whose chances of survival on Planet Earth are better than ours—due in no small part to the probability that this hybrid creature would treat its environment in a more humane way than we do. 'ARTE\_mis' was exhibited at Kapelica Gallery for two months and has met with great success and generated much attention among the public. Lately we were delighted to learn that Maja Smrekar will receive the Golden Nica for her K-9\_topology at The 2017 Prix Ars Electronica Prizewinners."

Simon Gmajner

#### 5.2 Conferences / Seminars

Conferences and Seminars provide the necessary spaces for groups from different sectors to meet, network, inspire one another, and foster discussions and future collaborations. Moreover they increase science literacy, present citizens with ways to get involved in ongoing initiatives, and showcase techniques and tools for environmental sensing. [1]

Table 4 Conference and seminar events. It shows the name of events, public reached and agents that have been collaborating with partners to carry them out.

WP1 BIODESIGN	Activities name (number of events	Number of	Collaboration		
Partner	of same activity) public reached		DIY & local communities	Education, Academia & Research	Industry, Company & Startups
UNIGE	BioFabbing Convergence: Fabrications and Fabulations; Your Smartphone, a scientific tool?	220	Hackuarium; Hackteria	Musée d'Histoire Naturelle de Genève	
UPD	Biodesign NightScience 2016	600			Cité des Sciences et de l'Industrie, Carrefour Numérique, UNESCO

DITOs aims to integrate different perspectives and publics. Seminars and conferences are a direct entry point for people who want to approach different topics of science. In order to achieve this, partners have invited conference speakers with very different backgrounds. For example, UPD carried out a two-day conference about biodesign and interdisciplinarity, which gathered artists, designers, researchers, student teams involved in the iGEM competition (International Genetically Engineered Machine competition on synthetic biology), representatives from civil society, hackers, etc. Each speaker was able to share his/her views on biodesign and show the diversity of understanding and interpretation of this new concept within the framework of citizen science.

#### 5.2.1 Success Stories

UNIGE	Bruno Strasser	Geneva, 10-14/05/2017 -
		5 days

BioFabbing Convergence: Fabrications and Fabulations

http://togetherscience.eu/events/perspectives-on-diybio-phase-2\_fpzkn



Figure 4 UNIGE, BioFabbing Convergence: Fabrications and Fabulations - Photo credits: David Sun Kong

"BioFabbing Convergence: Fabrications and Fabulations' was an open event on the 10-14th of May, 2017 hosted primarily at CERN IdeaSquare in Geneva, Switzerland. The event was a first of its kind experiment to bring together the two cultures of scholars and practitioners of DlYbio/biohacking and citizen science. It was organised and supported by various Swiss-based organisations practicing art and citizen science like Hackuarium; Utopiana; and Hackteria, and academic and research institutions like University of Geneva; Citizen Cyberlab; and Confucius Institute. The objective was to foster transformative discussions, create learning experiences, and explore ways in which we can work together in the future. Combining two formats, a 'Conference on Critical Studies of DlYbio and Biohacking', and an 'Unconference of Global DlYbio and BioArt Networks', we freely shared research, tools, thoughts, and visions on DlYbio communities and practices. Participants were unanimously satisfied with the event and hoped it could become a

biannual occurrence with a possibility to participate for longer time to be able to produce more knowledge and tools. The success of the conference resulted from its innovative format, truly diverse set of participants (from four continents and a wide range of backgrounds), and constant efforts by the organisers at integrating diverse perspectives by offering open spaces for bottom-up organisation."

Bruno Strasser

UPD	lmane Baïz	Paris, 22-23/07/2016 - 2 days			
Biodesign NightScience meets iGAMER					
http://togetherscience.eu/events/biodesign-nightscience-phase-1					



Figure 5 Talk during Biodesign NightScience 2016 - Photo credits: Yves Ininahazwe



Figure 6 UPD, iGAMER 2016 - Photo credits: Yves Ininahazwe

" 'Biodesign NightScience 2016' was organised in parallel with iGAMER 2016 that year, so we could appeal a wider public: most of the participants of biodesign NightScience (which consists in a series of talks and a hackathon) were students and professionals, whereas iGAMER (during which participants play and vote for their favourite games) rather attracted families and kids. We had the chance to welcome a broad array of speakers, from geographically dispersed places. They rapidly got along with each other and made contacts. This double event brought together a new and more diverse community. In terms of organisation, collaboration with our partners at La Cité des Sciences et de l'Industrie went smoothly. Onsite operations and logistics were very well prepared and everyone knew what to do. We have had excellent feedback from the public so far: the venue was perfectly adapted to this two-event and contributed to create a positive environment. Participants especially enjoyed meeting with new people, sharing good moments by spending lunch and evening time together. After the event, the student teams who designed the games were able to improve their prototypes based on public's impressions."

Imane Baïz

# 5.3 Gaming competitions / Online engagement

Gaming competitions and online engagement encourage new generations to envision and create other forms of public engagement in science and problem-solving through collective intelligence. These result in online games or activities reaching a large numbers of people even beyond the boundaries of Europe. [1]

Table 5 Gaming competitions / Online engagement. It shows the name of events, public reached and agents that have been collaborating with partners to carry them

WP1 BIODESIGN	Activities name		Number of	Collaboration				
Partner	(number of events of same activity)	public reached	NGOs	DIY & local communities	Education, Academia & Research	Local & national government	Others	
КІ	Labbooks	n/a (in developm ent)						
Meritum	CityHacking	7	Centrum Organizacji Pozarządowych	Silesia Hackerspace; TEDxKatowice		Local government		
UNIGE	Europe's Interactive Citizen Science Map	n/a (in developm ent)	Zooniverse		CERN			
UPD	Game Jam Biodesign and The City;  GameLab Masterclasses (2);  CRI Journal;  MOOC on Synthetic Biology;  iGAMER 2016	713		CRI GameLab; Gamelier; pop- up urbain			Cité des Sciences et de l'Industrie, Carrefour Numérique, UNESCO	

The 'Labbooks' project is still in development. Simon Gmajner suggests that: "Labbooks (in total 6 versions altogether – 3 per WP) are planned to be used as instructable tools for participants at workshops. They will be put on our BioTehna (and possibly Kersnikova) website, as well as on togetherscience.eu website in PDF form, available for download to anyone that wishes to facilitate or conduct their own similar workshop. As the Labbooks are intended to present the methodology and procedures of a workshop that produces a physical item (prototype, solar charger, microscope...), the steps photo materials and guidelines need to be produced by mentors / facilitators of specific workshops." A piece of one of them is shown in Figure 7.



Figure 7 Draft of a piece of a 'Labbook"

#### 5.3.1 Success stories

Meritum	Pawel Wyszomirski	Katowice, 25/10/2016 - 23/11/2016, 1 month			
CityHacking					
http://togetherscience.eu/x/1c9w6zq					

"Between 25th October and 23rd November we held several workshops based around the 'CityHacking' app for Android mobile phones. The application tries to enrich urban experience by creating a game environment that helps to understand the flow of data produced by cities and participate in collecting them. For the start we choose financial data to analyse. We co-operate with several institutions and organisations like Center for NGOs, Silesia Hackerspace and local government representatives. The events were organised for representatives of NGOs, local government, as well as, coders and programmers. We would like to create an interdisciplinary group of people."

Pawel Wyszomirski

UPD Imane Baïz Paris, 20-23/06/2016 - 4 days

Game Jam Biodesign and The City

http://togetherscience.eu/events/gamelier-game-jam-phase-1\_pgtjx

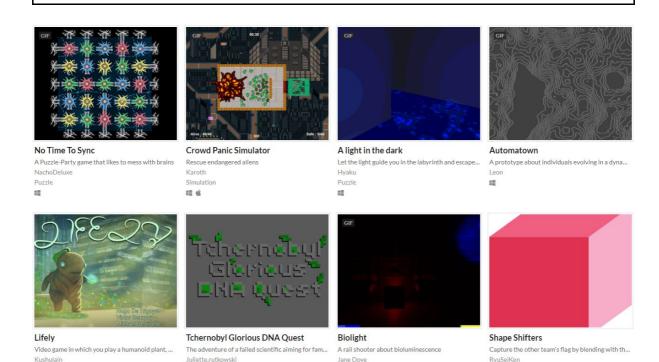


Figure 8 Screenshot of the games that have been created during the Game Jam Biodesign and The City. They can be found online here: <a href="https://itch.io/jam/biodesign-and-the-city">https://itch.io/jam/biodesign-and-the-city</a>

"'Gam Jam Biodesign and The City' was organised at the Center for Research and Interdisciplinarity (CRI) on the 20th floor of Tour Montparnasse from June 20 to 23th. As part of the GameLab Summer School 2016 programme, the CRI invited [pop-up] urbain, Gamelier association and CRI open source electronics researcher Kevin Lhoste to facilitate this game jam and share with jammers keynotes on the themes of urbanity and biodesign. During this 4-day event, participants had the chance to experience game making, playtesting sessions, open-mic nights, food, and even a breathtaking view over Paris! Every year, the GameLab Summer School gives the opportunity to international students to build biology-inspired games, with the aim of pushing the boundaries of biodesign and game development. Assisted by experts in biology, game making and education, students work in teams and contribute to open source science and design. In addition to taking part in fascinating classes, varied challenges and exciting events, it is a great time for them to share skills, experiment, and learn by doing in an open environment. As for [popup] urbain, the association has been interested ever since its creation in the possibilities of interdisciplinarity between the urban world and the video game

industry. This game jam was a step for more collaborations between the two and hopefully the first out of many more to come."

Imane Baïz

# 5.4 Discussions / debates at Science public cafés and public screenings

Discussions, debates at Science public cafés and public screenings encourage open discussions about science and technology and their related issues at the personal, local, and international levels by exposing people to topics of local or international importance in science and technology through friendly face-to-face conversations.[1]

Table 6 Discussions / debates at Science public cafés and public screenings. It shows the name of events, public reached and agents that have been collaborating with partners to carry them out.

WP1 BIODESIGN	Activities name (number	Number			Collaboration	
Partner	of events of same activity)	of public reached	NGOs	DIY & local communities	Education, Academia & Research	Industry, Company & Startups
UCL	CwB BioCafé;  London film night;  Reading Group: Science behind the Headlines;  Science film Night	58		Dr Owen Bain - independent Quantified Self (QS) practitioner in London	Centre for Obesity Research, University College London	Tekiu
КІ	Freaktion Bar (5)	175	IRNAS Institute	Hackteria; GaudiLabs	National Institute of Chemistry in Ljubljana	
Meritum	Biodesign Café	600	Stowarzyszenie Eksperymentator zy		Uniwersytet Śląski	
UNIGE	BioNights (10)	1645			Conservatoire et Jardins botaniques de Genève; Montoya Laboratory, University of Geneva; Professor Dietrich, HUG (Geneva Hospital); Thierry Brun; Researcher at the University of Geneva; Scienscope Genève; Musée d'Histoire naturelle de Genève; Biology Department of the University of Geneva	
ws	OpenLabEvening (12)	170	_	Dutch DIYBio	Botanische Tuin Amsterdam	

These activities, allow the public to get very close to specific topics in science, covering a very wide range of topics for which a powerful network of collaborations is essential.

#### 5.4.1 Success stories

UCL Cindy Regalado London, 03/03/2017

London film night: 'Food & data: empowering citizens and patients?'

http://togetherscience.eu/events/science-film-night-phase-2\_hfsdn



Figure 9 UCL, London film night: 'Food & data: empowering citizens and patients?' Group discussion after documentary screening - including the use of self-tracking devices in medicine; a Fitbit used by University College Hospital clinicians and their patients passed around - Photo credits: Cindy Regalado

"This event was a documentary screening and group discussion with expert guests: Dr Owen Bain who brings a 'quantified self' perspective together Dr Andrea Pucci who brings medical and clinical perspective. We began the event with the screening of the BBC documentary 'Eat, Fast and Live Longer'. This was followed by a 1.5hr convivial conversation with our guest speakers about prevention of cardiovascular disease and the state of the art in medical research: what's known and not (e.g. gut signals and calorie restriction); how we track our health comparing the medical research and Quantified-Self (QS) approaches (what is takes to do it, what it means, showcasing different techniques and tools e.g. Fitbit); how understanding data and data collection might (or not) empower patients and citizens; and how this links to (or is in tension with) UK policies on health. The target audience was general public - in particular, those interested in the topics of health and medicine but no professional knowledge of it. This event was a unique opportunity to build connections with an independent Quantified Self (QS)

practitioner, Dr Owen Bain, who through his own practice and leveraging his position/credentials has gained recognition and has created a link between the QS community and a government agency to begin shaping policy on self-tracking as a mode of preventative medicine. We also engaged with Dr Andrea Pucci who had never done public outreach/engagement and who liked it so much, he is looking forward to do more."

Cindy Regalado

KI	KI Simon Gmajner Ljublj				
Freaktion Bar #5					
http://togetherscience.eu/events/biotalks-phase-2_lsclh					



Figure 10 KI, Freaktion Bar #5 at Kapelica Gallery - Photo credits: Hana Jošić

"'Freaktion Bar' is a generic name for science café – type of events that we are organising at Kersnikova Institute for the past year. The events themselves have been influenced by discussions organised in the past by Kapelica Gallery called 'Bridging the Gap' which brought together artist & scientists discussing their collaborative projects or the context surrounding a specific scientific theme or an art project. Whereas those events were held in scientific institutions, 'Freaktion Bars'

are mostly held in Kapelica Gallery in a relaxed, intimate atmosphere with food and drinks available for participants. The evening discussion normally revolves around a handful of speakers, consisting of artists, scientists, experts, a moderator, and a hybrid arts artwork that implement biotechnological or other scientific processes. The most notable of Freaktion Bars was the discussion held in conjunction with Maja Smrekar's project ARTE\_mis that gathered together the artist, her assistant at the project from the field of DIY bio community Gjino Šutić, a world-wide authority on cellular sciences Stephen Minger, and Toni Pustovrh – the chair of Slovene Chapter for Bioethics at UNESCO. The talk was attended by 60 attendees that actively participated in the debate regarding future hybrid potentials, boundaries in biotechnology and ethical views surrounding them."

Simon Gmainer

Meritum	Meritum Pawel Wyszomirski				
Biodesign Café					
http://togetherscience.eu/x/1kcqe27					



Figure 11 Meritum, Biodesign Café at the Silesian Science Festival 2016 - Photos credits: Pawel Wyszomirski

"During the 1st Silesian Science Festival (organised by Silesian University) we had a stand and talk space on the theme 'Download citizen science apps!'. We encouraged people to download several citizen science app for their smartphones. We discussed the purpose of citizen science and encouraged participants to undertake a range of science activities. As well as working with the university, we also collaborated with Association Eksperymentatorzy, which aims to promote science research. The event was targeted at the general public present during the Silesian Science Festival. It was a great opportunity to meet with huge numbers people. Our stand was visited by roughly 600 people during the two-day event. Science festivals are good places to contact the general public and have discussions about citizen science. But remember about sweets on your stand!;)."

Pawel Wyszomirski

# 5.5 DIY & DIT Workshops

DIY and DIT Workshops allow participants to develop trust, confidence, and skills to experiment, raise questions, co-create and, to potentially engage in their own investigations and initiatives. DIY and DIT Workshops provide safe and inclusive spaces for people of all ages and background to engage with and learn from each other by sharing, rekindling, and building new skills and knowledge through handson experience. [1]

Table 7 DIY & DIT workshop events. It shows the name of events, public reached and agents that have been collaborating with partners to carry them out.

WP1 BIODESIGN	Activities name (number	Number of		Collaboration				
Partner	of events of same activity)	public reached	NGOs	DIY & local communities	Education, Academia & Research	Local & national government	Industry, Company & Startups	Others
UCL	Film night and sensory experience	45			Royal College of Arts			
MP	OpenBio Workshops (4)	58		Openlab Madrid;	BIFI			
КІ	DIY Laboratory; Dmitriy Morozov: 'Until I die'; Bio Friday Academy (12)	130	IRNAS Institute; RogLab (MGML); MGLC Ljubljana; Stripburger Comix; Zavod Trajekt; Slovenian Unit of UNESCO for Bioethics	Hackteria; GaudiLabs; UR Institute	Faculty of Social Sciences, Institute of Cell biology	Municipality of Ljubljana (Department of Education), Ministry of Culture, Student Organization University of Ljubljana	Biobank	

Meritum	Bio Hack The City	n/a (in development)						
ws	Do It Together Bio (4); Het Praktikum (8); Open Wetlab project evening (5); Test It Yourself	513	Hortus Botanicus Amsterdam			Bureau Biosecurity	Motherboard; biophil.es	Xandra van der Eijk
UPD	High school Biodesign workshops (21); Leadership Programme (2); Biodesign Workshops (9)	497	Open Science School; Blacksmith Institute	CRI GameLab, echOpen; OpenPlant; Cambridge Makespace; Hackuarium; Institute of Making; Volumes Coworking	Les Savanturiers; Lycée Jean Jaurès, Paris; Lycée Jean- Baptiste Poquelin, Paris; Lycée Léopold Sédar Senghor, Paris; Lycée darie Curie, Paris; Lycée de la Vallée de Chevreuse, Paris; University of Cambridge; Department of Biochemical Engineering, UCL; EPFL; John Innes Centre; UCL	Académie de Versailles		Fondation Pierre Fabre

As seen in Table 7, DIY and DIT workshops are the large group of events in DITOs. This is in line with the practical approach of citizen science since they promote a powerful engagement and learning by doing. Due to the importance of the workshops on terms of number of activities, it has been considered appropriate to showcase a variety of approaches in the *Success Stories* section.

## 5.5.1 Success stories

MP	Chema Blanco Madrid, 27/5/2017	
OpenBio Workshops: 'The electric power of raspberries'		
http://togetherscience.eu/events/the-electric-power-of-raspberries		



Figure 12MP, OpenBio Workshops: "The electric power of raspberries" - Photo credits: OpenLab Madrid

"MP works as a citizen lab and therefore we try actively to include proactive citizens on board to collaborate and work together in different activities. One of our most successful examples is the collaboration with a group of great biology students that are really into the DIY and DIT world: OpenLab Madrid. MP provides them a place to stay and develop their ideas, some materials and other facilities. OpenLab has helped us in return organising some workshops for kids and adults. Specifically, this one, 'The electric power of raspberries' was designed for families and the facilitators were David Santalices and Miriam Arrollo with the help of Felipe Silva. They taught the children and parents what energy and electricity consist of and how a photovoltaic cell works, by making one from raspberries. The families were really engaged and had a great time. I am pretty sure that the kids won't see raspberries and other fruits in the same way from now on."

Chema Blanco

KI	Simon Gmajner Ljubljana, 2016-2017	
Bio Friday Academy		
http://togetherscience.eu/events/bio-friday-academy-phase-1_mblzb		



Figure 13 KI, Bio Friday Academy - Biocuriosity - GenLab, BioTehna Lab - Photo credits: Hana Jošić

" 'Friday Academy' is an educational programme led by Kersnikova Institute for the past three years. It consists of individual and thematically grouped workshops run on DIT principles that bring the youngest population in touch with the newest scientific discoveries and processes. The activity sensitises youngsters for science and helps them to better understand the rapidly changing world around them. It directly involves the youngsters as hands-on participants, and gives them knowledge to tackle and understand scientific discoveries while at the same time encouraging them to be co-creators of change. An entire chapter of Friday Academy has been dedicated to the DITOs project within the biodesign as we conceptualised a series of workshops centred on genetics, DNA, and biotechnology. The children got to design and experiment with DIY laboratory equipment, and discovered the processes of extracting and multiplying their DNA. The workshops were designed as a complementary segment of the art programme taking place at Kersnikova by the end of 2016 & beginning of 2017 where the participants also got in touch with real-life

contemporary art practices implementing the scientific processes they learned about at the workshops."

Simon Gmajner

WS Xiamyra Daal Amsterdam, 27/05/2017

Do-It-Together Bio workshop #16 extracting pigments from algae

http://togetherscience.eu/events/do-it-together-bio-phase-2\_sckxg



Figure 14 WS, Do-It-Together Bio workshop #16: extracting pigments from algae - Photo credits: Waag Society

"'Do-It-Together Bio' is a series of workshops with a biology-related topic in which artists and scientists are involved. This workshop was hosted by Waag Society and organised by bio-artist Xandra van der Eijk in collaboration with scientist Ronald van Dierendonck. The main target audience was the general public. Xandra started with introducing her works and her way of working/thinking. Subsequently, she introduced the participants to different species of algae that she collected on the beach. Xandra and Roland explained the different pigments secluded in them and how they could be isolated. Thereafter, the participants experimented with isolation of pigments using different tools and solvents and finally the participants were taught some applications for the extracted pigments such as textiles and paper. Interestingly, the percentage of women attending this workshop was extremely high compared to other DIT Bio workshops. This is probably because of the subject. Most women were working/having an interest in fashion and/or were working with textiles. This workshop worked out very well because of the enthusiasm and perseverance of the participants and as well because of the good preparation work of Xandra and Roland. Before the event there was **good communication** in terms of who was taking care of which consumables and tools. Additionally, Xandra and Roland have been in the Waag many times. **They know the location which could also help in having a good result**."

Xiamyra Daal

WS	Wieke Betten & Pieter van Boheemen	Amsterdam, 05/07/2017	
Het Praktikum			
http://togetherscience.eu/events/het-praktikum-crispr-hoop-of-horror-1 https://waag.org/en/blog/praktikum-place-experiment			



Figure 15 WS, Open Evening: 'Het Praktikum' - Photo credits: Waag Society

"From February to June 2017 we hosted a series of thematic evenings called 'Het Praktikum': bringing reflection on science and technology to the forefront. We organised eight evenings on four themes. The first night of each theme, the participants focussed on exploring moral issues and our standpoints, the second evening everyone engaged in a hands-on experiment to further the collective

understanding and judgments. We aimed to engage interested citizens of all backgrounds, bridging the gap to ethical assessment and information on state-of-the-art technologies that would otherwise remain behind academic walls. In contrast to most Waag events, this series was held in Dutch. The topics were: CRISPR technology, bioterrorism, personalised medicine, and genetic modification. Reflecting on these evenings there are a few points we would like to take with us in organising similar events in the future. Our evaluation showed that participants particularly enjoyed the combination of thinking and doing, more than some would have expected. The first evening would not have worked (so well) without the second evening, but we are content to have chosen to suspend the hands-on activity because it created an atmosphere in which participants were actively engaged in moral inquiry. Our evenings clearly show that the idea that moral discourse is something for academics only is inaccurate. This was partly due to the playful structure of the evenings. For instance, the organisers presented the topic from two extreme viewpoints and then everyone did a statement game to unravel and discuss standpoints. This game, in which participants took turns in responding, was to ensure that it was not only about expertise or knowledge, and that everyone was part of the discussion. The use of the local language also increased the diversity in age and background among the participants."

Wieke Betten & Pieter van Boheemen

UPD	Elina Moraitopoulou & Imane Baïz	Paris, February 2017	
High School biodesign Workshops			

http://togetherscience.eu/events/high-school-biodesign-workshops-phase-2\_nrjsc http://www.genie-bio.ac-versailles.fr/spip.php?article283

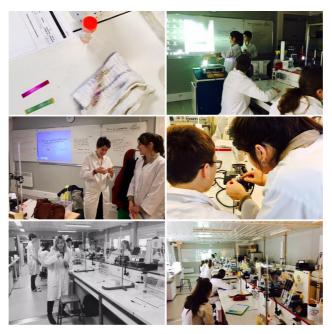


Figure 16 UPD, High School biodesign Workshop in Lycée Jean-Baptiste Poquelin - Photo credits: Imane Baïz

"The 'High School biodesign Workshops' constitute a series of workshops addressing the field of biodesign for students aged 15 to 17 years old through a variety of experimentation activities. These activities were categorised in 3 main topics: I) Introduction to microalgae and its mapping in water samples from different areas, II) Applications of microalgae and alginate and the process of bioremediation and III) Experimentation with kombucha and its different uses. The final aim was for the students to explore the principles of biodesign by experimenting on case studies and participating in classroom activities. Our collaborator schools and teachers came from the network of the Académie de Versailles and the Open Science School association developed the scientific kits used in classroom. During these workshops. students seemed enthusiastic to have people other from their teachers introducing them to interactive and interdisciplinary applications of biology. Our experience from every classroom was unique. Most remarkably, though, together with my colleagues Alicia Mansilla Sanchez and Imane Baïz we were amazed by the involvement and enthusiasm of the teachers Sabah Kelai and Géraldine Caravol and students respectively. These amazing students' and teachers' teams worked during a series of sessions on the above mentioned workshop topics, and as an example of their

devotion and engagement we would like to cite the outstanding example of the redaction of the Journal *Biotech News* by the professor of biotechnology Géraldine Carayol, a work inspired by the series of *High School biodesign Workshops* we carried out in lycée Marie Curie de Versailles in Paris. Moreover, the viewpoints and understanding in Citizen Science of the students and teachers nourished our vision on the field during our brainstorming sessions."

Elina Moraitopoulou & Imane Baïz

UPD	Elina Moraitopoulou & Imane Baïz	Paris, 13/03/2017	
Leadership Programme			
http://togetherscience.eu/x/1ivzd6z			



Figure 17 UPD, Exchanges with teachers during the 'Leadership Programme' - Photo credits: Yves Ininahazwe

"The 'Leadership Programme' is a Teaching Through Research programme addressed to young teachers and researchers in life sciences and biotechnology. It aims to help them develop and implement innovative educational projects in their schools. During the programme - of which the High School biodesign Workshops are an indispensable part -, the participants explored the use of biodesign as a creative educational tool that ensures full complementarity between teaching and research.

After having completed a few High School biodesign Workshops, Imane, Alicia and I had already collaborated with the majority of the teachers involved in the workshops and the Leadership Programme. As such, during our final meeting on the 13th of March, we had the chance to exchange experience, knowledge, feedback and future visions regarding innovative educational science projects in schools with the inspector and teachers from the Académie de Versailles, representatives from Les Savanturiers project and from the association Open Science School, but also researchers we have been collaborating with for the organisation of our previous Colab biodesign Workshops (Colette Matthewman from the John Innes Centre, Brenda Parker from the University College London and Paolo Bombelli from the University of Cambridge). The researchers exchanged with the teachers the latest research on their fields, their vision of collaborating further with teachers and students and answered to the teachers' questions. On the other hand, the targeted questions made by the teachers, highlighted the points to be ameliorated. One of the most important conclusions that rose at the end of the Leadership Programme was that teachers will always be the nodal point when it comes to introducing innovation in classrooms, and therefore they should always play an indispensable part of the cocreation procedure."

Elina Moraitopoulou & Imane Baïz

UPD Elina Moraitopoulou London, 26-28/11/2016 & Imane Baïz 3 days

# biodesign Workshop: Co-Lab Bioremediation

https://issuu.com/shneel9/docs/co-lab\_book

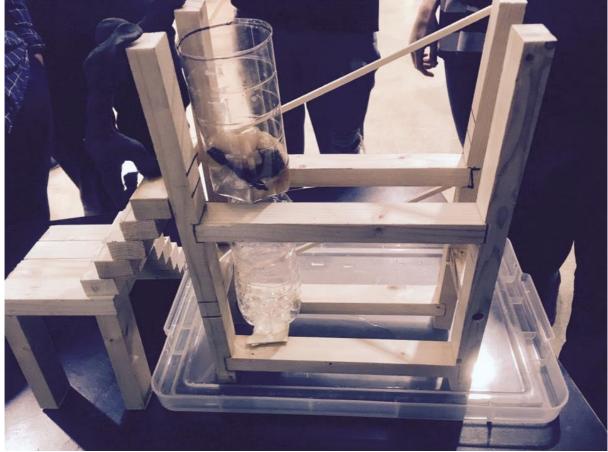


Figure 18 UPD, Participants showing their prototype during 'Co-Lab Bioremediation' - Photo credits: Imane

"The 'Co-Lab workshops' are a series of interdisciplinary co-creation workshops around different topics related to biodesign. The 3-day Co-Lab Bioremediation workshop and was held at University College London and Institute of Making from November 26-28th, 2016. Bioremediation refers to the use of plants and microorganisms to remove or sequester pollutants. This event gathered participants from different specialisations ranging from biology, engineering and chemistry, to neuroscience, architecture, design and social scientists, with the aim to collaborate, co-design and prototype solutions that tackle environmental pollution. The remarkable aspect of this workshop was that its topic

was linked to a real pollution case-study, introduced by the Blacksmith Institute NGO based in India. As such, the workshop started with introduction to the case-study, and a stakeholder empathy map activity, during which we tried to understand different viewpoints and interests of policy makers, industries, local organisations and populations involved in the case study. During the three days of the workshop, scientists had the opportunity to learn about design thinking and ethnographic methodology in science and designers gained exposure to lab environment and techniques. By the end of the workshop, the five following projects were produced by participant teams and presented to the public: Self irrigate/Lowtech bioreactor, Bio-Bucket Chromium Bio-remediation, CHROM-ACTION! Replacing Chemical ETPs with Biological ETPs, Citizen lead (Pb) detection and Fungi Edu Kit."

Elina Moraitopoulou & Imane Baïz

#### 6 Online resources

This section provides a set of summaries given by each partner that explain the kind of online resources they have produced up to month 13, as well as a list of the online resources that have been published through DITOs online portal. This list is compiled using the Events Diary that every partner fills in through the web page. Part of this information can also be found in Deliverable D6.5. [2]

#### 6.1 UCL

"At UCL we use both institutional and social media outlets to share information and create resources that can be used over a longer period of time. Particular emphasis is also placed on reaching UCL's target audiences, as identified in our analysis for the preparation of the communication, dissemination and exploitation plan and its update (Deliverables D6.2 and D6.5). Blog posts about the project are added to the Extreme Citizen Science **ExCiteS** research aroup https://uclexcites.wordpress.com/. Muki Haklay also writes extensively in his personal blog https://povesham.wordpress.com/, where he provides summaries of events, analysis of recent publications, links to presentations and further resources. The UCL team also share information through the ExCiteS Twitter account, @UCL ExCiteS, and Facebook page: https://www.facebook.com/TogetherScience/. Presentation slides are shared on SlideShare website and in case of video recording of talks and presentations, on YouTube and on the group's website. UCL ExCiteS also uses the group's mailing lists with more than 800 subscribers. Blogs about events run by UCL are https://citizenswithoutbordersdotcom.wordpress.com, where relevant information, links, and photos are shared. Events organised through 'Science has no Borders' are promoted and tweeted about during the event using @CwB London. Sciencehasnoborders.org (which links to our meetup group is an event scheduling platform and functions as a space for members of the public to learn about upcoming events, rate the events they attended and leave comments including references and links to resources that they talked about/shared during the event. We encourage

people to use the platform to post their own events or interesting events they plan to attend. Another important online resource that UCL provides is the institutional repository, where DITOs deliverables and outputs (e.g. policy briefs) are deposited and become available for search by research-oriented search engines."

Cindy Regalado

#### 6.2 MP

"Medialab Prado uses Twitter, Facebook and its own web page to communicate and disseminate the events that are organised. It puts also a lot of effort to gather proper documentation during the activities to spread knowledge. In the case of biodesign activities, MP agreed with the collaborators from OpenLab Madrid that they would document every event, workshop or activity that was carried out in Medialab Prado. In order to do this, OpenLab uses Meetup, Facebook and they are writing a great blog where they explain their activities and include instructions to allow other citizens to recreate them."

José María Blanco

## **MP** - List of online resources

#### **DIY & DIT Workshops:**

Science "Do it yourself": home experiments without danger of burning down your house: <a href="http://medialab-prado.es/article/ciencia-do-it-yourself-experimentos-caseros-sin-peligro-de-incendiar-tu-casa">http://medialab-prado.es/article/ciencia-do-it-yourself-experimentos-caseros-sin-peligro-de-incendiar-tu-casa</a>

#### 6.3 KI

"The Kersnikova Institute is utilising many online channels to communicate and disseminate DITOs activities. The main and most up-to-date resources are our Facebook pages (Kersnikova, BioTehna, RAMPA Lab, and Kapelica Gallery) where the specific activities are posted first by the department where the activity takes place and later on shared by Kersnikova. Secondly, there is an existing Kersnikova newsletter being utilised to publicise DITOs activities within the Kersnikova domain. The newsletters go out on a monthly basis and are mostly used for announcing events, given that the events accompanying content and visual materials are planned in advance. The websites are currently under (re-)construction and will start to go on-line again by the last trimester of 2017 (Kersnikova.org, RAMPA.org, BioTehna.org), while Kapelica Gallery is still on-line but it runs on an outdated flash design so it is available only to some visitors. Twitter accounts have been set up-mostly private via which we connect to the DITOs Twitter account and tweet or retweet relevant information. Later this year, the Kersnikova smartphone app will be launched so we will also disseminate information via that channel."

Simon Gmajner

#### 6.4 MERITUM

"For promotion and dissemination of its activities, Meritum uses Twitter, Facebook and its own web pages and blog. It puts also a lot of effort to make accessible information produced during workshops and meetings. The Meritum publishes information on DIY Lab workshops on web page - <a href="http://szkola.eco21.pl">http://szkola.eco21.pl</a>. Other information are published on <a href="http://trenerzy.slask.pl">http://trenerzy.slask.pl</a> and a dedicated page for the DITOs project - <a href="http://eco21.pl">http://eco21.pl</a>."

Pawel Wyszomirski

## 6.5 UNIGE

"UNIGE uses Twitter, Facebook and its own web page to communicate and disseminate the events that are organised. More specifically, the Bioscope team uses social media (Instagram and Twitter) to interact with the public, as well as a dedicated web platform. They also regularly contribute to public television and radio on issues related to citizen science and public participation in science."

Elisa Radosta

## **UNIGE - List of online resources**

## **Conferences and Seminars:**

BioFabbing Convergence: Fabrications and Fabulations:

http://citizensciences.net/biofabbing/

# Discussions / debates at Science public cafés and public screenings

BioNights:

http://bioscope.ch/?page\_id=41

#### 6.6 WS

"The activities of Waag Society bring a growing community of innovators together and focus on connecting these people. Social media groups target specific DIYBio, Bio art and Biodesign communities via Meetup and Facebook. On Open Saturdays the Waag building is entirely open to the public, which serves as an entry point for many to get to know Waag Society, the activities that are taking place and the opportunities to work together on research projects. The knowledge transfer is organised via several channels, depending on the needs of the users. For open evenings so called 'Project Canvasses' are used, which are updated weekly. In

project journals the participants keep track on a more detailed level. Many also use social media or their own website to disseminate their insights and results. For technical documentation the Github platform is frequently used, as well as a platform developed by Waag Society called OpenThings. The members also connect to each other through a Slack chat channel. On this channel active members and regular visitors inform each other about the progress of projects, interesting articles and events and other forms of knowledge sharing. Frequently Waag Society writes blogs and vlogs about activities that take place. These blogs and vlogs are being shared on Waag Society's and DITOs website and through Facebook, Youtube and Twitter. Other than these social media channels, Waag Society has mailing list to whom we send our monthly newsletters."

Pauline Appels

## **WS** - List of online resources

# **DIY & DIT Workshops:**

OpenLabEvening: <a href="http://togetherscience.eu/blog/diy-biology-at-the-open-wetlab-in-amsterdam">http://togetherscience.eu/blog/diy-biology-at-the-open-wetlab-in-amsterdam</a>

# 6.7 UPD - Center for Research and Interdisciplinarity (CRI)

"The CRI (http://cri-paris.org/) experiments and spreads new ways of learning, teaching and carrying out research that stimulate collective intelligence, in order to address the challenges of our time. The CRI is working towards the realisation of a learning society by exploring subjects that are related to Life, Learning and Digital Sciences. Several mechanisms are in place to ensure that innovation activities at the CRI are amplified. For example, the Center is highly involved in the production of MOOC: 14 MOOC have already been produced and disseminated (eg. MOOC on Synthetic Biology supported by DITOs); more than 50 000 views on FUN, Youtube (https://www.youtube.com/channel/UCAwnYwPOM-fcJ7wkfp1Xn7q) (https://vimeo.com/criparis); 13 MOOC scheduled for 2017. Also, the CRI's extensive social media presence on Twitter (https://twitter.com/criparis) and (https://www.facebook.com/CRI-Paris-Center-for-Research-and-Facebook Interdisciplinarity-340423209419902/) is a leverage to spread the documentation by community members and immediately gives them a much wider audience."

Imane Baïz

Version 1.0

## **UPD** - List of online resources

#### **Conferences and Seminars:**

biodesign NightScience 2016: https://storify.com/Avaugoux/igamer-biodesign-edition

# Game competitions and online engagement:

Game Jam biodesign and The City:

https://itch.io/jam/biodesign-and-the-city

GameLab Masterclasses:

https://www.youtube.com/watch?v=AVVCxzkBeH4&t=601s

https://www.youtube.com/watch?v=G9XttJrsmmE

https://www.youtube.com/watch?v=GIOx5n53zL8

https://www.youtube.com/watch?v=2qACAqgwOLI

MOOC on Synthetic Biology:

Trailers:

https://www.youtube.com/watch?v=KP8uluheETg&list=PLL0D4plWid-vp7YvR0QKm2AMl5cDcJkXn

Course 1: Making Yogurt the Scientific Way:

https://www.youtube.com/playlist?list=PLL0D4plWid-tT4OstYDlfALbNQqDSr-KK

Course 2: Your First GMO:

https://www.youtube.com/playlist?list=PLL0D4plWid-tayTVN4E8e8JkW-tkkH1WP

Course 3: Let's Paint with Bacteria:

https://www.youtube.com/playlist?list=PLL0D4plWid-uhn\_EqkqkrAPR32r0GwYX0

Course 4: Your First Cloned Gene:

https://www.youtube.com/playlist?list=PLL0D4plWid-scaVB8UgXjUbKAY5eQnmIB

Course 5: Isolating Genes from Natural Sources:

https://www.youtube.com/playlist?list=PLL0D4plWid-u5ccAHhBA7Xcf7Qmm8-gUv

# **DIY & DIT Workshops:**

Biodesign Workshops:

http://echopen.org

http://openscienceschool.org/home/biocolab/

http://www.synbio.cam.ac.uk/news/co-lab-openplant-an-interdisciplinary-science-design-workshop

Co-lab Open Plant:

https://www.youtube.com/watch?v= IZawy0Bp04

https://www.youtube.com/watch?v=S4vW0t4SYv4

https://www.youtube.com/watch?v=WsINeqYpVT4

https://www.youtube.com/watch?v=uMMVwfOHC6w&t

https://www.youtube.com/watch?v=zsSR0NxhHyE

https://www.youtube.com/watch?v=umMafAopdJo

https://www.youtube.com/watch?v=cM52LFqNliw

https://www.youtube.com/watch?v=cntcliXILaA

https://www.youtube.com/watch?v=UN2asyx3nMk

Co-lab Bioremediation:

https://issuu.com/shneel9/docs/co-lab\_book

Co-lab Biomaterials EPFL:

https://bioinspired.epfl.ch/page-138783-en.html

https://www.youtube.com/watch?v=gLBi48QGbmY

High School Biodesign Workshops:

http://www.genie-bio.ac-versailles.fr/spip.php?article286

http://www.genie-bio.ac-versailles.fr/spip.php?article283

https://madmagz.com/fr/magazine/1056477#/page/1

## 7 Conclusion

In this deliverable, a set of different tables present a summary of the activities organised and supported in Phases 1 & 2 up to month 13. Through 'Success Stories', partners were able to describe and illustrate some of the actual events by telling their personal experiences and highlighting good practices. The report has also given pointers to the resulting online resources, both in the form of a contextualised summary and in the form of a comprehensive list in Section 6 Online Resources. Table 8 shows that 117 activities have been completed during these first 13 months (M1-M13). This represents more than 87% of the promised events for Phases 1 & 2 (M1-M24).

Note that some of them are extra activities that were not included in the GA. They represent an extra effort to promote and disseminate the potential of citizen science to the society. While writing this document, several activities are taking place, so we expect that all the promised events will be completed by month 24.

Table 8 Summary table to compare activities promised in the GA during the first twenty four months and the ones carried out until month 13

WP1 BIODESIGN	Phase 1	Phase 2	TOTAL Phases 1 & 2	
	M1-M6	M7-M24	M1-M24	M1-M13
	Total number of events planned in the GA per partner from month 1 until month 6	Total number of events planned in the GA per partner from month 7 until month 24	Total number of events planned in the GA per partner from month 1 until month 24	Total number of events carried out per partner from month 1 until month 13
Partner				
UCL	3	4	7	6
MP	0	1	1	4
кі	6	25	31	22
Meritum	2	4	6	3
UNIGE	6	10	16	13
ws	8	8	16	30
UPD	18	24	42	39
TOTAL all partners	43	91	134	117

Success Stories have illustrated the diversity of activities that are included in DITOs, and especially in WP1:

- Interactive and travelling exhibitions held in universities about our relationship to the world around us (eg. Science has no Borders Unwrapped!, UCL) or in art galleries on the potentials of biotechnology (eg. Maja Smrekar: 'ARTE mis', KI);
- Conferences and seminars about DIYbio/biohacking and citizen science (eg. *BioFabbing Convergence: Fabrications and Fabulations*, UNIGE; *Biodesign NightScience 2016*, UPD);
- Game competitions and online engagement through educational applications that aim to understand the flow of data produced by cities (eg. CityHacking, Meritum) or to experience new forms of interaction between human beings and their environment (eg. iGAMER 2016, UPD; Game Jam Biodesign and The City, UPD);
- Discussions / debates at Science public cafés and public screenings
  that give participants the chance to share convivial conversations with guest
  speakers about prevention and the state of the art in medical research (eg.
  London film night, UCL), interdisciplinary art and science debates in a relaxed
  atmosphere regarding future hybrid potentials, boundaries in biotechnology

- and ethics (eg. *Freaktion Bar*, KI) or stands during festivals to exchange with the general public about citizen science (eg. *biodesign Café*, Meritum);
- **DIY and DIT workshops** that are meant to include proactive citizens to collaborate on different activities related to biodesign (eg. *OpenBio Workshops*, MP), use the local language to engage interested citizens of all backgrounds so they can reflect together on science and technology (eg. *Het Praktikum*, WS), bring the youngest population in touch with the newest scientific discoveries and processes, encouraging them to be co-creators of change by experimenting with DIY laboratory equipment (eg. *Friday Academy*, KI; *High School Biodesign Workshops*, UPD), help young teachers and researchers in life sciences and biotechnology implement innovative educational projects in their schools by exchanging experience and knowledge (eg. *Leadership Programme*, UPD), work on a biology-related topic in which artists and scientists are involved (eg. *Do-It-Together Bio*, WS), for scientists to have the opportunity to learn about design thinking and ethnographic methodology and for designers to gain exposure to lab environment and techniques (eg. *Co-Lab Biodesign Workshops*, UPD).

These events involve **different levels of engagement** that can be mapped onto the **'escalator model'** (p.127 in [1]), from a **top-down approach** where the institution invites the public to take part in an event whose whole content has been defined upstream (eg. *Maja Smrekar: 'ARTE\_mis'*, KI) to a **bottom-up strategy** where the institution facilitates materials and mentorship to let participants prototype their own ideas on a collaborative way (eg. *Co-Lab biodesign Workshops*, UPD) or where participants are offered the possibility to run 'unconference' sessions (eg. *BioFabbing Convergence: Fabrications and Fabulations*, UNIGE).

Table 1 shows that **DITOs** partners have been working with more than 90 collaborators. There are noticeable differences among activities, so external collaborations are not always required for an event to be successful. But that number certainly shows the profound effort we are making to involve a variety of agents in order to establish a stable network of citizen science practitioners and facilitators. However, this report has shown that collaborations with local and national government are very scarce. To foster the links with the policy and decision makers, **WP1** partners could present the outcomes of their events to policy makers through increased collaboration with ECSA and Tekiu in WP4. Adding policy engagement to public engagement activities may help to achieve a bigger impact on society. For instance, at UPD, events organisers and attendees at the *European Citizen Science Forum* in Paris, 25 March 2017 presented their projects to policy makers at a local, national and European level. This engagement was facilitated by close collaboration with Tekiu, ECSA and RBINS during event planning and resulted in an invitation to the *Interim Evaluation H2020* in Brussels, 28 April 2017.

About the documentation and online resources, a variety of strategies have been applied: from the use of social media to communicate an event in advance,

questionnaires to gather useful information or videos recording seminars and personal interviews for dissemination, to carefully designed instructables or online repositories for blueprints and code to spread knowledge and strengthen the possibility that some projects could be replicated elsewhere.

By reviewing the examples, through the process of writing this deliverable, we would like to emphasise **the importance of documenting success stories**: firstly, they have the capability to show personal stories and motivations of the people participating in citizen science activities. Secondly, they provide specific insights to DITOs' practice, what ease the process of sharing knowledge among partners (and even outside the consortium) within a particular context. And thirdly, they allow other voices not necessarily related to DITOs organisation to be heard, what can bring fresh ideas and identification of other needs from the public to be tackled by citizen science processes.

# 8 Bibliography / References

- [1] Doing It Together science (DITOs), grant agreement 709443.
- [2] DITOs Consortium, 2016. *Doing It Together science: Communications, Dissemination and Exploitation Plan Update* UCL, London.