



Global report 2014 · 2023



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Publications

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Prepared by Fabio Balli – <https://doi.org/10.5281/zenodo.1344080>

In a nutshell

Our purpose

We co-create transdisciplinary, **open scientific knowledge** that encourages **self-determination in health**, particularly in respiratory and mental health.

We are currently active in three product areas:

- digital games to prevent and manage asthma attacks
- digital games to screen and strengthen one's breathing capacity
- devices that transform the breath pressure and flow into digital data

and two process areas:

- research-creation methodology to take care with fun
- events to put in commons inclusive ways to take care

Our philosophy

Today, six humans in ten have no access to medical care or do not adhere to it. Achieving collective health requires a **mindset shift from competition to convergence**. We should minimise the number of projects existing while maximising their accessibility.

At Breathing Games, we document our activities, outcomes and methodology so that people can freely use, enrich and adapt them.

We use [BY-SA](#) / [AGPL](#) / [OHL-S](#) licences that require people to: 1) cite the source of elements reused, 2) release the improvements done under the same licence, so that everyone can also benefit from them (commoning).

We invite people to explore a holistic, critical approach of care ([critical public health](#)).

Our achievements

Despite our frugal organisation and resources, we achieved unique results:

- 131 co-creation and research activities held
- > 1000 contributors gathered
- 45 games and controllers prototyped
- 89 scientific communications released
- 16 media interviews done including on the Swiss and Canadian TV
- > 1 million viewers reached, notably with the docu *A new Economy*
- 1 festival: 'taking care together'

Collective value created

We estimate the value of our initiative to 2.2 million Swiss francs:

- 79% of volunteer contributions (1.7 million CHF, 50 000+ hours)
- 12% in research funds (260'000 CHF, notably: French Hospitals Federation, Haute École Arc, Canadian Institutes of Health Research, Concordia University)
- 5 % in philanthropic aid (109'000 CHF, notably: a Genevan foundation, Fondation Leenaards, Lunt Foundation)
- 5% in kind (104'000 CHF notably: Necker hospital, Sainte-Justine hospital, Lift:labs, Concordia University, Geneva Health Forum, University of Geneva)

Our organisation

The Breathing Games Association is a **public interest Swiss association** founded in 2017. Its accounts are audited since 2019.

Breathing Games participates in the [WHO Global Alliance against chronic Respiratory Diseases](#) (FENSA review in progress), the [Open Source Initiative](#), [Après GE](#), the [International Geneva Welcome Center](#), and is a signatory of the [United Nations Global Compact](#).

Our origins

In 2014, Fabio Balli and Yannick Gervais study Game Design at the University of Montréal. Together with clinicians, they imagine games for children who have cystic fibrosis. The aim is to make the daily exercise, which helps clear the mucus stuck in the lungs, fun. They use a device prototyped by John Bauplé to control the game with the breath.

In 2016, after a feasibility study and difficulties mobilising children and parents, the team starts prototyping games to help children prevent and manage asthma crises. Thanks to iterative research and development, the method, games and devices improve over time.

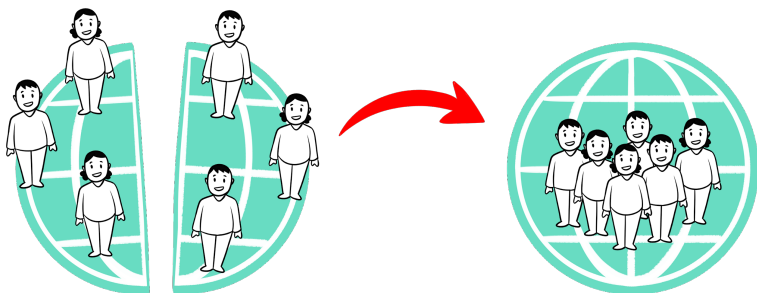
In 2020-22, the initiative slows down due to travel restrictions and caregivers' overload. A group of volunteers translates *Asthma Heroes* and *Asthmonautes* into 13 languages. In parallel, an event to promote inclusive approaches of care is organised. In 2023, the team revivifies.

Principles

Since 2016, Breathing Games has been a signatory of the Global Compact. We celebrate human life and the right to do meaningful activities. The first article of the Declaration of Human Rights leads our vision:

*All human beings are born free and equal in dignity and rights.
They are endowed with reason and conscience and should act
towards one another in a spirit of brotherhood.*

We understand collectively created health knowledge and technologies as the way to promote self- and mutual care. To “ensure healthy lives and promote well-being for all at all ages” (UN Global Goal 3), we believe that all should become creators of our collective wellbeing, putting in *commons* our experience, and ideas.



We encourage individuals and peer-to-peer communities to build on our work through following principles.

Free software and open-source hardware

We use tools that respect the users’ freedom to use and share them, and modify their source code and design, when such tools provide the functions we need, and do not require an excessive time to acquire them:

- GitLab for sharing our source-code and design
- GIMP for image edition
- MediaWiki for collaborative documentation

Accessible and adaptable co-created knowledge

Instead of an excluding copyright, we use licences that preserve the right to reuse and enrich knowledge and technologies if reciprocity is provided:

- GNU Affero General Public License 3.0 (Free Software Foundation)
- Attribution-ShareAlike 4.0 International (Creative Commons)
- Open Hardware Licence Strong Reciprocal (CERN)

We document and make our co-creation process, the source code and designs we create freely accessible at www.breathinggames.net.

Participatory research

To reduce power inequalities and encourage social transformation, we foster research *with* participants rather than *on* or *for* them. We consider that not having a positive impact when being privileged is unethical.

Open governance and distributed data system

We log contributions in time, money and kind to acknowledge individual efforts towards the collective. This also provides a basis for traceability.

We aim to develop a distributed platform to mutualize and redistribute resources across a global community. This should help individuals find communities, merge ideas, develop global projects, do peer-reviewed quality control, and co-define how data is managed. See chart below.

Agility









We foster transdisciplinarity. We take advantage of existing infrastructures, use a frugal approach, and develop low-tech products.

Thus, we build a coherent ecosystem: an open access commons increasingly capable of sustaining communities in developing and sharing health knowledge, fostering social justice, reducing inequalities.

Updated January 2024

Global goals

We contribute to the 2030 Agenda for Sustainable Development, adopted by the United Nations.

Goal	Target	Our contribution	
 <p>3 GOOD HEALTH AND WELL-BEING</p>	<p>Ensure healthy lives and promote well-being for all at all ages.</p>	<p>3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air [...].</p>	<p>We actively encourage the population to co-design solutions that meet their real needs, hence taking ownership of their health, and health technologies.</p>
	<p>3.d: Strengthen the capacity of all countries [...] for early warning, risk reduction and management of national and global health risks.</p>	<p>We provide members from the Global Alliance against chronic Respiratory Diseases with enjoyable tools that are easy to use, reproduce and adapt in low-resource settings.</p>	
 <p>1 NO POVERTY</p>	<p>End poverty in all its forms everywhere.</p>	<p>1.a: By 2030, ensure that all [...] have equal rights to economic resources, as well as [...] control over [...] appropriate new technology [...].</p>	<p>We provide a scalable, sustainable example of how people across countries, organisations and disciplines can cooperate to develop science-based innovation everyone can enrich.</p>
 <p>4 QUALITY EDUCATION</p>	<p>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p>	<p>4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development [...].</p>	<p>We ensure free access to educational tools and co-creation methods, and encourage vulnerable populations to develop skills to locally produce cheap and adaptable open hardware.</p>
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</p>	<p>8.3: Promote [...] policies that support productive activities, [...] creativity and innovation [...].</p>	<p>We foster a fair redistribution of resources among autonomous contributors to a collective project.</p>
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.</p>	<p>9.b: Support domestic technology development, research and innovation in developing countries [...].</p>	<p>We foster mutualized, open-source innovation across countries as a way to reduce redundancies, products unfit to users, and planned obsolescence.</p>
 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>Make cities and human settlements inclusive, safe, resilient and sustainable.</p>	<p>11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality [...].</p>	<p>We provide gratis and fun educational tools to foster awareness and dialogue about respiratory health and air quality, from childhood and across generations.</p>
 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>Ensure sustainable consumption and production patterns.</p>	<p>12.8: By 2030, ensure that people everywhere have the relevant information and awareness for [...] lifestyles in harmony with nature.</p>	<p>We develop a data commons across countries, that is elaborated and managed with the participating communities.</p>
 <p>17 PARTNERSHIPS FOR THE GOALS</p>	<p>Strengthen the means of implementation and revitalise the global partnership for sustainable development.</p>	<p>17.6: Enhance [...] international cooperation on and access to science, technology and innovation and enhance knowledge sharing [...].</p>	<p>We create new mechanisms of cooperation based on participatory research, peer-to-peer production and distributed governance.</p>

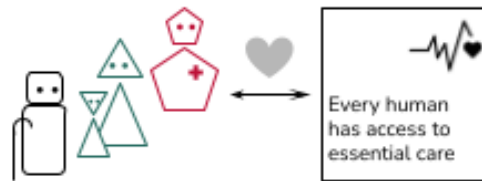
Organization

One goal for the professionalisation of our structure is to adopt an open governance model, and social impact indicators. This will allow us to scale up the initiative while keeping a structure that fosters open cooperation and transparent redistribution. Also read breathinggames.net/openvillage.

1 Ensure shared values among contributors



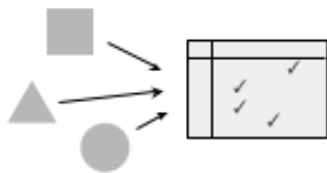
2 Reach consensus on common priorities



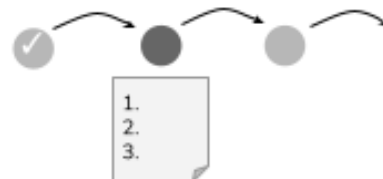
3 Find one's rightful place to contribute to the collective



4 Map existing projects and best practices



5 Consolidate the work, prioritize steps to adoption



6 Mutualize resources and allocate them fairly



Visual from <https://doi.org/10.5281/zenodo.5527044>

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And all contributors and
participants of the festival
'taking care together'
(www.openvillage.ch)

If your name is missing, please
write us at breathinggames.net

Funding

Our contributors generate most of the commons value – estimated 1.3 million Swiss francs up to December 2023. We present below an overview of the revenue and expenses generated for and by Breathing Games in different countries. In-kind contributions are not included, except for Canada (5630 CAD).

Switzerland, 2018-2022 (update required for 2023)

Grants for co-creation, managed by Breathing Games Association. CHF.

Expenses	120456.90	Revenues	120456.90
Game jams	21268.23	Donations	105900.00
Infrastructure	12719.10	BG France	9364.40
Promotion	10120.90	Other	5192.50
Documentation	13063.20		
Prestations	14663.70		
Development	14110.15		
Admin fees	7315.85		
IT / Web presence	7091.35		
Transportation	6327.60		
Meals	4731.60		
Hosting	3857.75		
Research	1281.00		
Covid loss	1100.30		
Banking fees	679.30		
Result	2126.87		

Funds managed by third parties. CHF.

Expenses	98400.00	Revenues	98400.00
Research	48400.00	Seed fund HE Arc	48400.00
Game jams	40000.00	Foundation in Geneva	40000.00
Co-facilitation	10000.00	Geneva U - partnership	10000.00

Italy, 2017

Grant for hardware, managed by WeMake. EUR.

Expenses	472.56	Revenues	472.56
Electronics	472.56	OpenCare	472.56

France, 2019-2021 (update required)

Grant for co-creation, managed via Balli's structure (requirement). EUR.

Expenses	54000.00	Revenues	54000.00
Game jams	16800.00	Fonds FHF	54000.00
Development	22080.00		
Devices	3106.00		
Taxes	10294.00		

Canada, 2014-2022 (update required for 2023)

Grants for co-creation and research, most managed by Concordia U. CAD.

Expenses	48556.27	Revenues	48556.27
Redistribution	23671.09	Can Instit Health Research	22530.00
Research	11418.00	Concordia University	16400.00
Travel	4580.24	CHU Ste Justine	5770.00
Food	3541.61	Breathing Games	2176.75
Electronics	3219.25	Forces Avenir	2000.00
Material	1477.08	Transit BG	666.28
Space	649.00	Individual donations	420.00

South Korea, 2019-2023 (update required for 2023)

Funds managed by third parties. KRW.

Expenses	12020000	Revenues	12020000
Co-facilitation	12020000	Yonsei U - partnership	12020000

2023

Relaunch of the research, as well as the game and hardware development in Montreal thanks to Sze Man Tse, Yannick Gervais, Tiberius Brastaviceanu, Olivia Cerutti-Monteventi and other contributors. We also hosted three workshops as part of the 'taking care together' initiative, and a series of panels about open hardware for health. Fabio Balli also defended his thesis: 'Healing Communities. What if we collectively had the capacity to overcome any crisis in a matter of days?'. The thesis builds on Breathing Games, and documents its evolution. More at: www.fabioballi.net/thesis



Co-creation events

- June 8 Workshop, [Recovering and Healing](#)
- June 22 Workshop, Planetary Health Solidarity Initiative
- July 8 Workshop, Therapy through Arts, Living Museum Wil

Communications

- June 19-14 Panels, IASC biennial conference Nairobi

The key event of the year was the second edition of the GHF Open Village which was renamed 'taking care together' festival. Find eye-opening testimonials in the synthesis (12 pages in 10 languages) and videos of the event at www.openvillage.ch.

PRESERVING OUR HEALTH: A COMMON HERITAGE

To pool health knowledge and technologies ensures better care, divides costs and creates local employment.
Listening to plural realities in health allows us to humanise care, and to build resilience in the face of crises.
20 testimonials, festival 'taking care together'

download and cite:
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中文, 中文, Español, Français, العربية, বাংলা, Русский, Português, Deutsch

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IMPACT

500 PARTICIPANTS
158 CONTRIBUTORS

500,000 FRANCS OF COLLECTIVE VALUE
7,800 HOURS OF CONTRIBUTIONS

3 days in 2020 20 activities 16 videos 21 wiki pages 1000h → 50K	122 days of preparation 25 weekly meetings 163 exchanges 92+ tasks 2200 hours → 110K	9 days of festival 65 activities + 25 Sharing Circles 30 videos and podcasts 80 wiki pages 3000 hours → 150K	follow-up 1600 hours → 80K	in-kind 40K	financial support 60K		
logistics 10K	documentation 13K	infrastructure 13K	promotion 10K	hospitality 9K	services 8K	transport 6K	IT 2K

leadership ●●●
Breathing Games Association

patronage ●
Geneva Health Forum
Open Geneva

financial support ●
a genevan foundation
Fondation Leenaards
Fondation Lunt

co-hosts ●●●
Fondation de l'Orme
Association re-pairs
Systmd
Alliance Santé Planétaire
Association Aura
WHO ●
APSAT ●
ARAET ●

co-organisation ●●●
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CERN
Collège de Rétablissement
CReACC-DiversitéS
DNDi
EchOpen

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IdeaVox
L'Art d'être vivant
La Main Tendue Genève
Le Caméléon
LogAir
Maker's Asylum

Mamajah
Minds
Nuit Blanche
NVC Geneva
Open Data
Radio Libre
SDG Solution Space ●
University of Geneva ●

LET'S MEET ON
www.openvillage.ch

18 MEDIA INTERVIEWS

101 WIKI P.

38 VIDEOS

Co-creation events

- Jan 28 Hackathon, Open Legal Lab
- Ap 30-May 8 Festival 'Taking care together', Geneva Health Forum
- June 16 Workshop, Yonsei University

Communications

- April 21 Panel, IASC Global conference
- May 20 Presentation, Universidade da Beira Interior
- May 22-27 Working group, Open Education Global
- June 14 Panel, United Nations Geneva
- July 7 Presentation, SDG OpenHack Népal
- September 2 Contribution, Genève 2050

2021

Important outcomes were achieved in 2021: Asthma Heroes and Asthmonautes were translated in 12 languages thanks to Guillaume Jeanmaire's network; two new gamepads were built by Richard Ibbotson, and a first Rise level was created by Felix Jeanmonnot. Two articles on clinical tests realised in Montreal were released thanks to Nicole Silva, Khadidja Chelabi, Sze Man Tse et al. Continuing support was provided by Yannick Gervais, Thomas Gaudy, Emmanuel Kellner and Charly Pache. We also mobilised and presented 15 respiratory health commons at the WHO GARD meeting.



Co-creation events (all online)

- April 24 Workshop, 'From discipline to cooperation', Open Edu Day
- Aug 24 Workshop 'Envisioning', Swiss Public Health conference
- Oct 12 Workshop '**The Great Renaissance**', IASC general conf.
- Nov 26 Workshop '**Health Democracy**', GDHub hackathon
- From May GHF Open Village gatherings

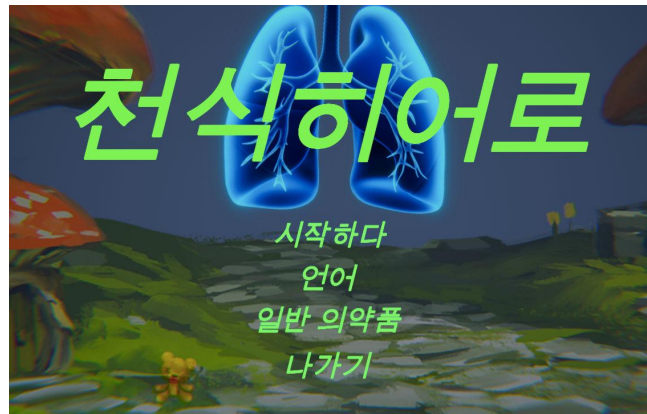
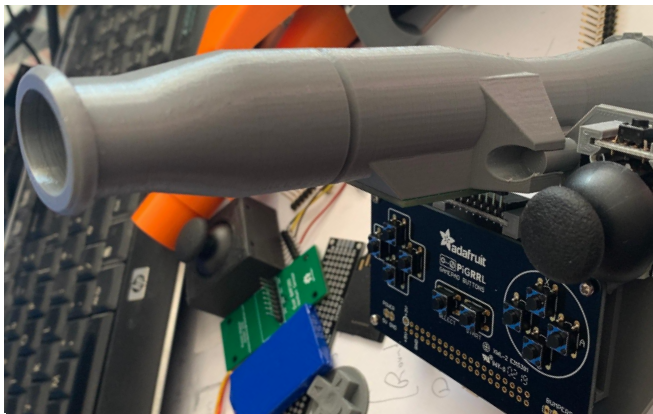
Communications (all online)

- Jan 28 Presentation, World Summit on the Information Society
- Feb 3 Panel, Young European Biotech Network
- Feb 7 Panel, FOSDEM
- Mar 23 Panel, World Summit on the Information Society
- April 2 Journée innovation en santé, **Cité des sciences**
- May 6 Poster, Colloque méthodes mixtes francophonie
- May 18-19 Presentation, Réseau mère-enfant de la francophonie
- July 5 Presentation, Geneva-Tsinghua summer school on health
- Oct 6-7 Presentations, **WHO GARD general meeting**
- Oct 11 Talk, Geneva hub for Global Digital Health (GDHub)
- Nov 2 Podcast, GDHub

2020

We were invited to host a joint event for the Geneva Health Forum (global health congress) and Open Geneva (civil society hackathons). We hosted the 'Open Village,' a hands-on event to promote freely reproducible material for health. We created coronavirus-openkit.net to list hackathons and open-source material against covid. We also [interviewed Prof. Pittet](#), who spread the alcohol-based hand rub patent-free, which saves 8 million lives yearly.

Regarding the games, we focus on developing the Rise. Asthma Heroes was also translated into Korean. Co-creation events planned in Paris and Besançon as well as different communications were also cancelled or postponed. We are also professionalizing our structure, and asked for an external audit of the Breathing Games Association bookkeeping for 2019.



Co-creation events (all online)

- Mar 21 Test of the Rise multiplayer, global
- Apr 03-05 VersusVirus, Zürich
- Apr 24-26 EuVsVirus, Brussels
- Oct 11 Test of the Rise multiplayer, global
- Nov 16-18 **GHF Open Village**, Geneva Health Forum, Geneva

Communications

- Feb 3-5 Open Hardware from Academia Incubator, Bath
- June 11 Workshop Public Health Schweiz, online

Play is, like oxygen, “all around us, yet goes mostly unnoticed or unappreciated until it is missing.”

Dr Stuart Brown

2019

We invite young adults in Paris to create games around their experience of cystic fibrosis. We clinically test games in Montreal and Palermo, and improve and validate our game controller in Paris, Geneva and Montreal. Our initiative is broadcasted on the Swiss telejournal (300000 viewers).



Co-creation events

- Mar 9-10 Clinical study, Sainte-Justine, Montreal
- Mar 17-18 **Game jam**, Necker hospital, Paris
- Mar 20-24 **Game jam**, OpenGeneva Festival, Geneva
- Apr 14-16 Hackathon team, Arkathon, Sion
- Jun 19-20 Micro game jam on virtual reality, Concordia U, Montreal
- Oct 13-17 **Game jam**, Fondation Arc-en-ciel, Besançon
- Oct 19-20 **Game jam**, Necker hospital, Paris

Communications

- Feb 27 Libraries colloquium on games and education, Montreal
- Mar 20 Panel, Meet the makers of a better world, Geneva
- Apr 11 Exhibition, World Summit on Info Society forum, Geneva
- Jul 5 Poster, Gamification & SG Symposium, Neuchâtel
- Jul 11 Serious Play Conference, Montreal
- Jul 31-Aug 5 Gathering Open Science Hardware, Toronto
- Aug 27-Oct 2 CityPreneurs, Seoul
- Sept 27 European nights of research, Palermo
- Oct 25-27 Poster, **WHO GARD general meeting**, Beijing
- Nov 25 Presentation, Tsinghua SDG OpenHack, Beijing

2018

This year, we continue to develop seven games – Asthmonautes, Respi Heroes, LungLauncher, Bloïd, PeakFlow, PeakLeap and TikiFlow, see page Games – that will be clinically tested in 2019.



Co-creation events

- Apr 12-15 **Game jam**, OpenGeneva Festival, Geneva
- Nov 5-13 Residence, Eco2fest, Montreal

Communications

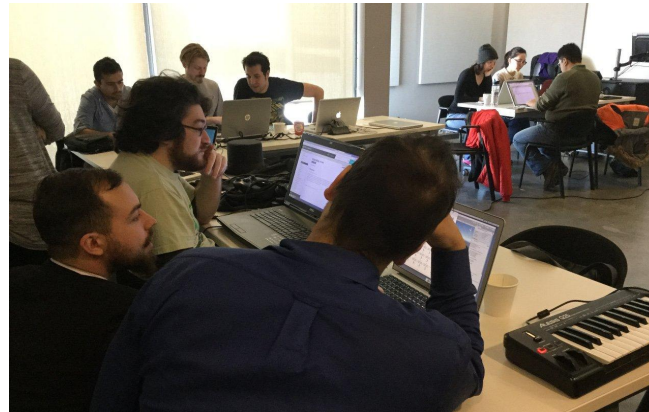
- Jan 13 Presenting to the research collective OMNSH, Paris
- Apr 3 Webinar at McGill University Game Lab, Montreal
- Apr 10 Quebec innovation week Sainte-Justine, Montreal
- Aug 31 Poster, **WHO GARD general meeting**, Helsinki
- Oct 12 Poster, Canadian Arts Therapy Conference, Montreal
- Oct 26 Photograph for 50 years of planning at UdeM, Montreal
- Nov 5 Presenting to PME MTL during Eco2fest, Montreal

2017

Breathing Games is funded by the Canadian Institutes of Health Research (strategy for patient-oriented research) and by the French Hospitals Federation (research and innovation fund). The first is a collaboration with Concordia University and CHU Sainte-Justine, the latter with Necker and Cochin hospitals.

Three game jams are held, as well as many scientific communications. A 3d-printed modular bed to test pressure and flow sensors is developed during a two-week maker in residence funded by the Horizon 2020 program of the European Union.

80 participants attend a screening of A new Economy, followed by a panel with social innovation experts Marguerite Mendell and Jean-Martin Aussant. The documentary is also released on Netflix. Breathing Games is also presented in an audio interview broadcasted by Les jeux sont faits.



Co-creation events

- Feb 18-19 [Game jam](#), Concordia U, Montreal
- Mar 1-3 [Game jam](#), Lift:Lab, Geneva
- May 25-26 Workshops on blockchain, C2 Mtl, Montreal
- Jun 3-10 [Game jam](#), Concordia U, Montreal
- Jun 21-Jul 8 Maker in residence OpenCare, WeMake, Milan
- Nov 30-Dec 2 Keynote and workshops Collaborate and learn/teach differently, Concordia U + CHU Sainte-Justine, Montreal

Communications

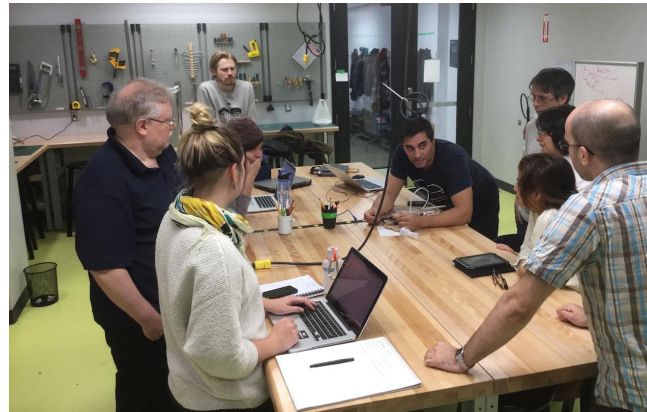
- Mar 24 Presentation, [Gathering Open Science Hardware](#), Chile
- Mar 24 Presentation, Global Goals Innovation Day, Geneva
- Mar 25 Presentation, Oxford U Global Challenge, Calgary
- Mar 25 Presentation, Concordia Education Symposium, Montreal
- Apr 12 Presentation, European Academy of Design, Rome
- May 10-12 Presentation and posters, ACFAS congress, Montreal
- Oct 6 Presentation on game jams, Lausanne U, Lausanne
- Oct 20 Presentation, OpenVillage Festival, Brussels
- Nov 3 Panel, [Canadian Science Policy Conference](#), Ottawa
- Nov 9 Poster, [WHO GARD general meeting](#), Brussels

2016

Breathing Games joins the [Open Source Initiative](#), and becomes a signatory of the [United Nations Global Compact](#), a commitment of organisations to “strive towards a world that benefits everyone, especially the future we borrow it from.”

Three game jams are held. An engineering student creates a core for different games, which centralises data collection, settings and therapy patterns. Interviews from 16 contributors are released on our [YouTube channel](#).

In collaboration with the Lung Association of Québec, we applied to the Google Impact Challenge, a five million dollar grant to help ten initiatives tackle the biggest social challenges (not selected).



Co-creation events

- Feb 10-12 [Game jam](#), Lift Conference, Geneva
- Aug 5-7 [Game jam](#), Concordia U, Montreal
- Aug 10-12 Workshop Health & Play, World Social Forum, Montreal
- Nov 7 Workshop Open Hardware, Concordia U, Montreal
- Nov 12-13 [Game jam](#), Concordia U, Montreal

Communications

- May 12 Presentation, ACFAS congress, Montreal
- June 9 Presentation, European CF Conference, Basel
- Aug 17-19 Workshop, [Symposium on Open Collaboration](#), Berlin
- Oct 3 Poster, FRQS congress on respiratory health, Montreal
- Nov 21 Poster, [Quebec annual public health days](#), Montreal
- Nov 22 Presentation, Mobile health apps colloquium, Montreal

2015

Eight researchers from the University of Applied Sciences Western Switzerland (Arc) started a study to evaluate the adequacy and cost of a serious game to increase respiratory compliance. We also collaborate with Sainte-Justine hospital to develop and test games for children who have asthma.

Breathing Games collaborates with Sensorica, a peer-production network specialised in open source hardware. We adopt its Value Accounting System, a platform that allows to log contributions in time, money or material and to redistribute funds with an equation.

An engineering student documents the cystic fibrosis practice in Switzerland and does a thorough reflection on the game design. Another engineering student adapts a software library to capture the noise made by mouthpieces used in cystic fibrosis treatment.

News about Breathing Games appears in national and regional CF newsletters in Spain. The team of Domain 7 follows Sensorica and Breathing Games for a documentary about “people making a fresh start towards building a new Economy.”



Co-creation events

- June 5-7 Hackathon, Arkathon, Sierre
- Aug 28-29 Hackathon, Sensorica, Montreal

Communications

- June 11 Poster, European Cystic Fibrosis Conference, Brussels
- Oct 29 Presentation, symposium on collaboration, Montreal

2014

Begin of the initiative as part of graduate studies in game design at Montreal University. Fabio Balli and Yannick Gervais build on the work done previously by John Danger. After developing the first prototype, a preliminary study is realised with ten children at Sainte-Justine hospital. The team is a finalist of Forces Avenir, which aims to recognize socially conscious students.

A website is created, and receives the certification “Health on the Net,” which aims to foster quality, objective and transparent medical information.

A sociology student writes a dissertation about serious games, describing opportunities and limits of our initiative and another project. A blog article about the initiative is written by Canada Research Chair on Health Innovations.



Co-creation events

- Feb 21-23 Hackathon, CHU Sainte Justine, Montreal
- Nov 5-6 Hackathon, Montreal Summit on Innovation, Montreal

Games

Most games are developed on Unity as we have no resources to contribute to developing a free/libre engine like Godot.

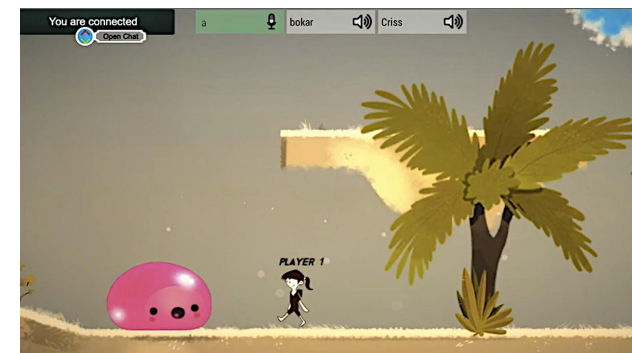
Games actively developed



Asthma Heroes
Preventing asthma attacks, 7-12 yo
90 min, Unity, Windows computer
RC, tested – 13 languages

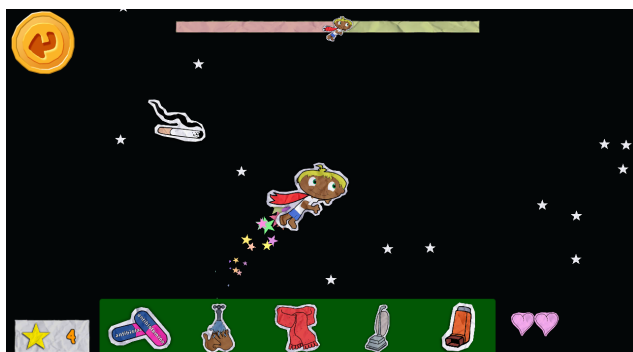


Asthmonautes
Preventing asthma attacks, 11-16 yo
90 min, GameMaker, Windows computer
RC, tested – 14 languages planned

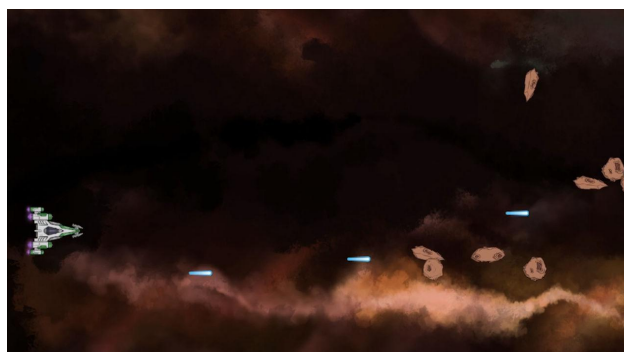


Rise
Mutual care in respi and mental health, 7+ yo
1-4 players online, Unity, Windows computer
Alpha – English

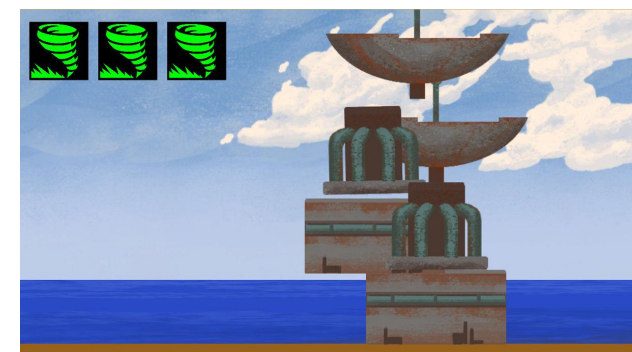
Games tested



LungLauncher
Prevention of asthma crises, 7-12 yo
4 minutes, Unity, Android smartphone
Tested – English and French



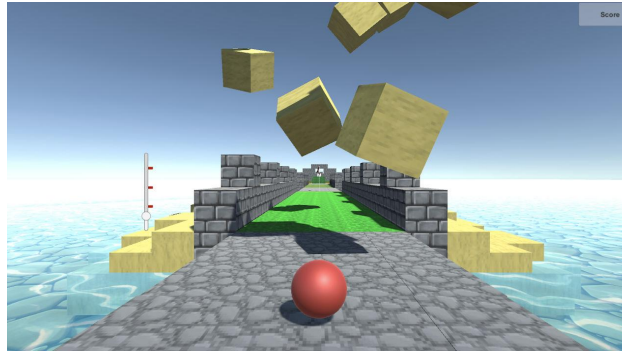
Bloïd
Breathing exercise for stress reduction, 5+ yo
5 minutes, Unity, Windows/Mac computer
Tested – English



TikiFlow
Self screening of lung capacity (PEF)
5 minutes, Unity, Windows/Android tablet
Tested – English and French

Discontinued prototypes

Following games were discontinued to the benefit of more functional games.



PeakFlow – Self screening of lung capacity



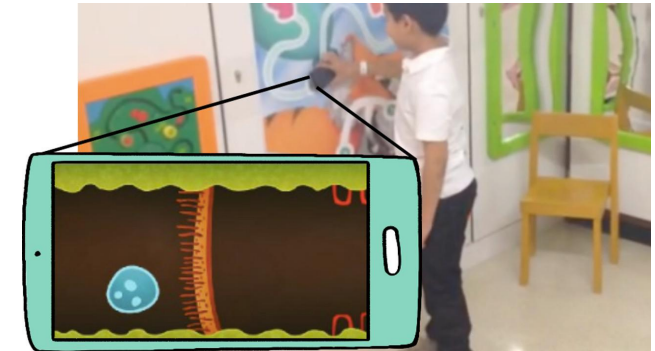
PeakLeap – Self screening of lung capacity



VR game – Exploring art related to breathing



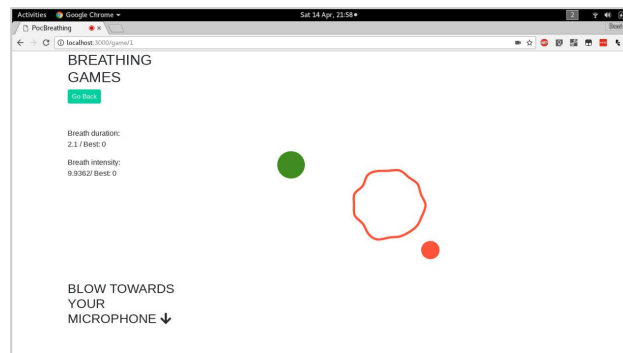
Mille-feuilles – Exercise to increase lung volume



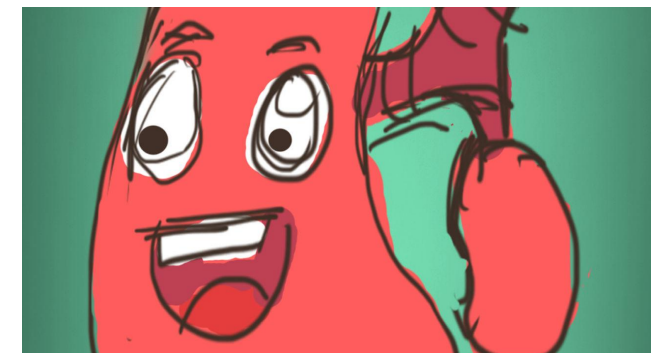
Pulmo – Respiratory health awareness



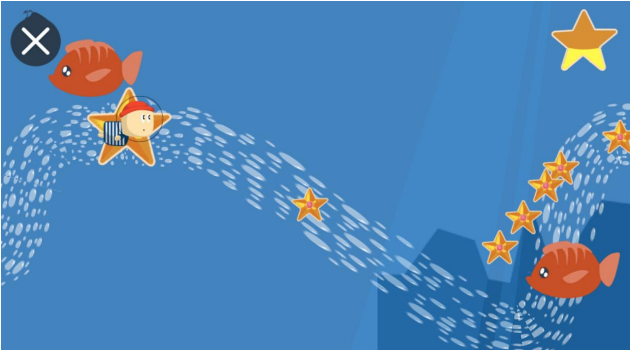
DicoSym – Mutual care in respi + mental health



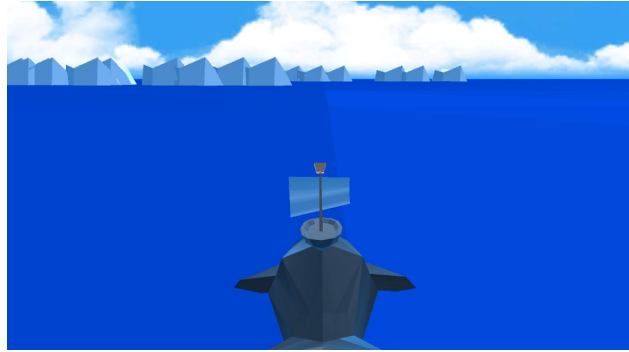
PocBreath – Breathing toy (on browser)



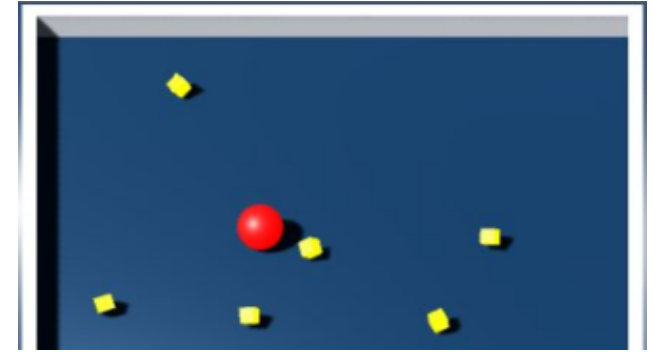
BreathingApp – Asthma medication follow up



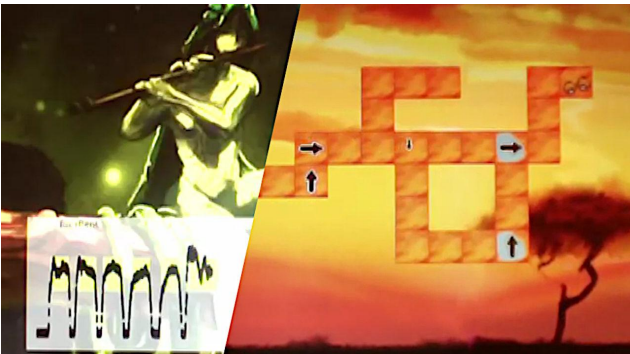
Heritages – CF airway clearance



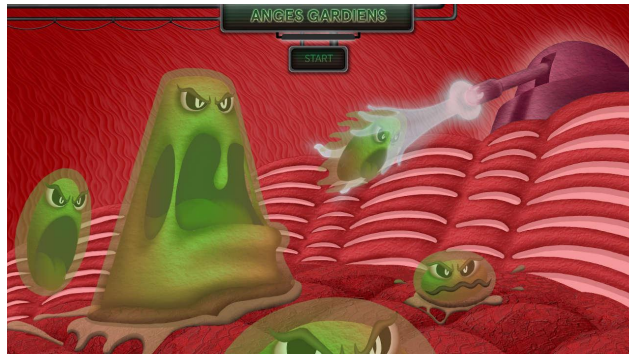
Les aventures du Briand – CF airway clearance



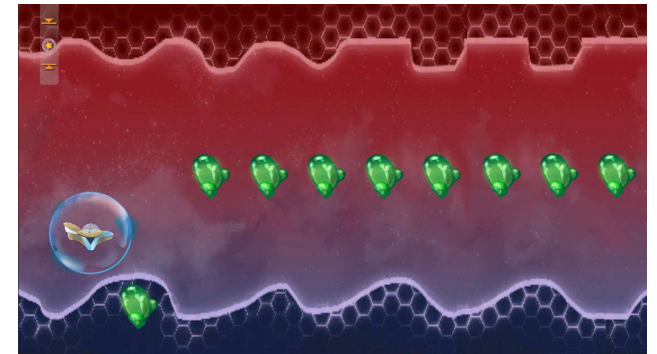
RollABall – CF airway clearance



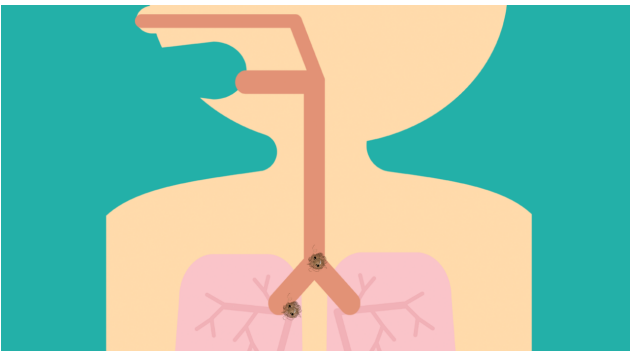
Globule – CF airway clearance



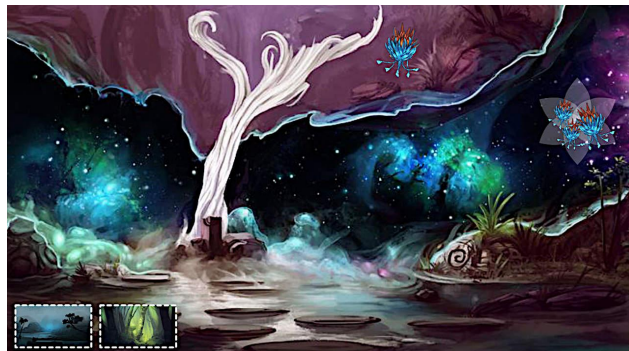
Ange-Gardien – CF airway clearance



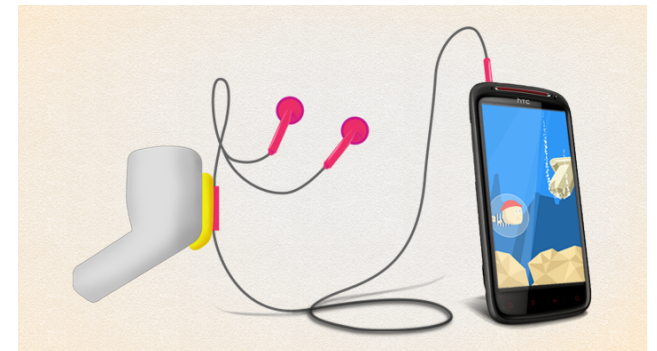
PEP Hero – CF airway clearance



Pulmination – Removing allergens



Celebrations – Respi health promotion (concept)



Sound library – Analyzing the noise

Hardware



Breathing gamepad [K]
Game controller measuring the flow and pressure, 3d-printed, Bluetooth and USB
Direct use
Actively developed



Spirotroller gaming [J]
Controller measuring the flow and pressure, 3d-printed, Bluetooth, three buttons
Direct use
Actively developed



Spirotroller enhanced [H]
Game controller measuring the expiratory flow, 3d-printed, Bluetooth and USB, three buttons
Direct use
Prototyped and tested



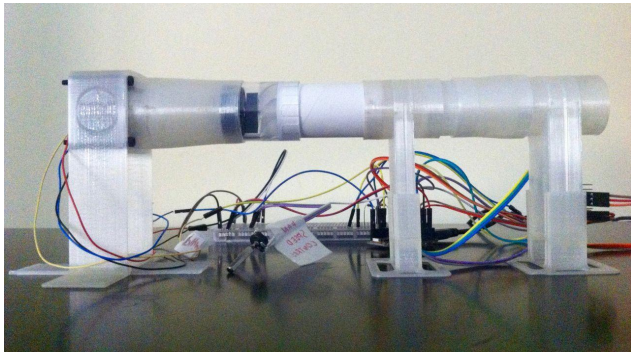
Spirotroller [G]
Game controller measuring the expiratory flow, 3d-printed, Bluetooth and USB, one button
Direct use
Prototyped



Led box [C]
Controller measuring the expiratory pressure, 3d-printed, Bluetooth and USB, 8x8 LED matrix
Use with mouthpiece
Prototyped



3D organic box [B]
Controller measuring the expiratory pressure, 3d-printed, USB, 1 LED
Use with mouthpiece
Prototyped



Modular test bench [F]
Bench including fan and modules to assess a variety of sensors in different settings

Direct use
Prototyped



Calibration syringe [E]
3 liter syringe for calibration

Use on controllers
Prototyped

GHF Open Village

Overview of the 2020 event initiated by Breathing Games and co-hosted with EchOpen, Aura, E-nable, LogAir to promote health technology as commons.

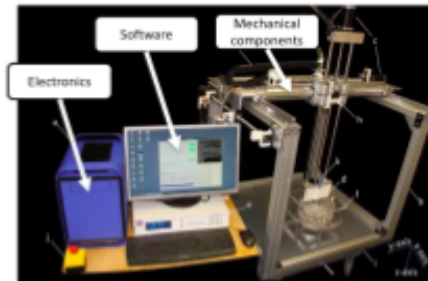
Download the synthesis in English, Français, Español, Português, русский, 中文, हिंदी, বাংলা, العربية.



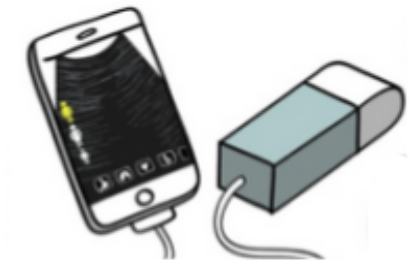
enablingthefuture.org – hand prosthesis



osdd.net – open-source drug discovery



opensourceimaging.org – affordable MRI scan



echopen.org – echo stethoscope



helpfulengineering.org
quality process

open-source for health:

- trustable by design
- up to 90% cheaper

www.openvillage.ch

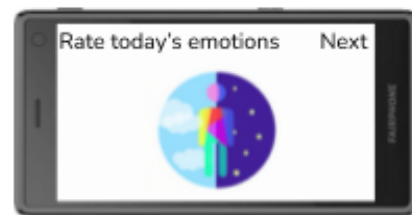
a ghf2020.org + opengeneva.org event with tondo.tech, joinseeds.com, santepop.qc.ca, yebn.eu



aura.healthcare, openhumans.org, cri-paris.org
log and analysis of bio data to detect seizures



logair.io – crowdmap air quality



mindlogger.org – collect and visualize data



hoosh.space/fuga – gesture into sound



breathinggames.net – making care fun

15 open-source respiratory health commons introduced by Breathing Games at the WHO GARD workshop 'Innovation in chronic respiratory diseases'.
 Download the presentation in English or watch the video.

Solidarity-driven medical innovation is up to 99% cheaper. 15 examples of open-source respiratory health commons



Images: openventbristol.co.uk, jogl.io, openpcr.org, ospfound.org, anticov.org, wikimedia.org, github.com, bemask.org, logair.io, gnuhealth.org, breathinggames.net, cemi.org.co, Victoria Kelly

Research

Time	Activity	Team	Organizations	Major funding
2021- now	n children with asthma test a game in different settings	Sze Man Tse, Myriam Bransi (Canada), Valérie Crijns (Belgium), Isabelle Sermet-Gaudelus (France), Stefania la Grutta, Laura Montalbano, Giovanna Cilluffo, Velia Malizia (Italy), Guillaume Jeanmaire (South Korea), Youssef Mohammad (Syria)	Sainte-Justine + Quebec + Necker hospitals, IBIR-CNR, Korea + Tishreen universities	–
2019- now	Combining air quality (fine dust) and breath sensing	Changsoo Kim, Jean-Henry Morin, Emmanuel Kellner, Fabio Balli	Yonsei and Geneva Universities, LogAir	UNIGE-Yonsei Seed Fund
2019- 2021	Involving young adults with CF in creating games to foster self-care	Isabelle Sermet-Gaudelus, Pierre-Régis Burgel, Maya Kirszenbaum, Julie Valette, Marlene Clairicia, Aline Lustre, Damien Fangous, Fabio Balli	Necker and Cochin hospitals	French Hospitals Federation Fonds FHF
2019- 2020	156 children with asthma test a flow-based game controller	Sze Man Tse, Myriam Bransi, Alena Valderrama, Fabio Balli	Sainte-Justine + Quebec hospitals, Concordia University	Canadian Institutes Health Research, Concordia U
2019- 2020	Five children with asthma and their parent test four games	Sze Man Tse, Alena Valderrama, Maria Frangos, Fabio Balli	Sainte-Justine hospital, Concordia University	Canadian Institutes Health Research, Concordia U
2017- now	Interviews of contributors	Maria Frangos	Maria Frangos	–
2015- 2016	Pre-study on serious games for cystic fibrosis → asthma	Christian Voirol, Aïcha Rizzotti, Typhaine Juvet, Gérald Huguenin, Stéphane Gobron, Nicolas Wenk, Calin Ionescu, Pauline Meyer, Fabio Balli	University of applied sciences Arc	Fonds d'impulsion HE Arc
2014	Ten children with CF test games with a pre-post survey	Annie Brochu, Nadia Marquis, Isabelle Tellier, Jacques-Édouard Marcotte, Sophie Laberge, The Thanh Diem Nguyen, David Duguay, Pascal Nataf, Yannick Gervais, Fabio Balli	Sainte-Justine hospital	–
2014- now	Documenting the co-creation	Various	Various	–

Publications

Book chapters

- Wu Ann, Tse Sze Man, Balli Fabio. Mobile Applications and Wearables for Chronic Respiratory Disease Monitoring. In Gomez JL, Himes BE, Kaminski N. **Precision in Pulmonary, Critical Care, and Sleep Medicine**. Humana Press 2020. DOI: 10.1007/978-3-030-31507-8.

Scientific articles

- Silva-Lavigne N, Valderrama A, Pelaez S, Bransi M, Balli F, Gervais Y, Gaudy T, Tse SM. **Acceptability of serious games in pediatric asthma education and self-management: a pilot study**. JMIR Pediatrics and Parenting 2021. <https://doi.org/10.2196/33389>
- Chelabi K, Balli F, Bransi M, Gervais Y, Marthe C, Tse SM. **Validation of a game controller to assess peak expiratory flow against conventional spirometry in children: A cross-sectional study**. JMIR Serious Games 2020; 9(1). <https://doi.org/10.2196/25052>
- Balli F. **Developing Digital games to address airway clearance therapy in children with cystic fibrosis: participatory design process**. JMIR serious games 2018; 6(4). <https://doi.org/10.2196/games.8964>
- Balli F. **Game jams to co-create respiratory health games prototypes as participatory research methodology**. Forum: qualitative social research 2018; 19(3). <https://doi.org/10.17169/fqs-19.3.2734>

Professional articles

- Balli F. Inspiring to play: Co-Creating Games for Respiratory Health in Montreal, Paris and Geneva. **Newsletter of the Global alliance against chronic respiratory diseases**; 2019; 2(2). https://gard-breathefreely.org/wp-content/uploads/2019/06/GARD-Newsletter-V2N2_FINAL_2019-06-19.pdf
- Brastaviceanu T, Lloyd T, Balli F. Production participative de matériel de recherche. In F Balli, J Lebel (eds). Recherche et communs : vers des sciences ouvertes. **ACFAS magazine 2019**. <https://www.acfas.ca/publications/magazine/2019/03/production-participative-materiel-recherche>

Reports and guidelines

- GARD members. **Beijing call to action for lung health promotion**. Global Alliance against chronic Respiratory Diseases 2019. <https://www.gard-breathefreely.org/newsletter/v1no6-2-3-6-2>

Scientific abstracts

- Balli F, Jeanmaire G, Chelabi K, Kellner E, Gingras S, Gervais Y. Méthodes mixtes, jeux, matériel ouvert et traduction en santé. In Gabrielle Chicoine, Pierre Pluye. **Théories et pratiques en méthodes mixtes : actes du 1er Colloque virtuel Méthodes mixtes francophonie (MMF) 2021**. http://mcgill-fammedstudies-recherchemedfam.pbworks.com/w/file/fetch/146220819/Actes-1er-colloque-MMF-virtuel_version%20finale_2021-09-20b-published.pdf
- Wenk N, Balli F. Breathing Games – Free/libre and open source games for respiratory health. **Gamification & serious game symposium 2019**; Jul 24; Neuchâtel, Switzerland.
- Frangos M, Balli F. Breathing Games: Promoting Respiratory Health Through Co-creation. **The Design Journal 2017**; 20(sup 1). <https://doi.org/10.1080/14606925.2017.1352976>
- Balli F. Health & Play – Addressing together the challenges of creating an open source standard for Breathing Games. In: **Companion to the proceedings of the 12th International Symposium on Open Collaboration; 2016** Aug 17-19; Berlin. ACM. <https://doi.org/10.1145/2962132.2962138>
- Balli F, Gomez V. Therapeutic adherence: exploring Open Collaboration to mobilize all stakeholders behind children with CF. **Journal of Cystic Fibrosis 2017**; 15(1). [https://doi.org/10.1016/S1569-1993\(16\)30478-7](https://doi.org/10.1016/S1569-1993(16)30478-7)
- Brochu A, Marcotte JE, Marquis N, Laberge S, Duguay D, Nataf P, Gervais Y, Balli F, Nguyen T. 2015. Video games for positive expiratory pressure (PEP) therapy in children with cystic fibrosis: a pilot study. **Journal of Cystic Fibrosis 2015**; 14(1). [https://doi.org/10.1016/S1569-1993\(15\)30030-8](https://doi.org/10.1016/S1569-1993(15)30030-8)

Scientific presentations

- Mendell M, Mattei U, Falcon L, Timm-Bottos J, Wazir R, Viatte B, Schull J, Laugeri M (co-hosts), Balli F (organizer). The Great Renaissance. Healing commons and tech for self-determination. **General conference of the International Association for the Study of the Commons; 2021** Oct 11-15; Phoenix, USA.
- Balli F. Co-creating health. Learnings from 20 game jams for health and the European hackathon against covid. **Geneve hub for Global Digital Health; 2021** Oct 11; Geneva, Switzerland. <https://doi.org/10.5281/zenodo.5527044>
- Balli F, Ibbotson R, Chhabra V, Pimentel JP, Suturin V, Falcon L, Timm-Bottos J, Kellner E, Menon J, Matringe M, le Couedic C **Open-source respiratory health commons. 15 projects communities can adapt, repair, reproduce for low cost medical care (libre and open-source tech). General Meeting of the Global Alliance against Respiratory Diseases; 2021** Oct 6-7. <https://doi.org/10.5281/zenodo.5515632>
- Balli F. Envisioning the future of public health: from online co-creation events to open science. **Swiss Public Health Conference; 2021** August 24; Bern, Switzerland. <https://doi.org/10.5281/zenodo.5139594>
- Balli F. **Health technology and medical innovation: why open-source is vital. Geneva-Tsinghua SDG Summer School; 2021** July 05; Geneva, Switzerland. <https://doi.org/10.5281/zenodo.5053608>
- Kirszenbaum M, Lustre A, de Beauvais N, Hauterive M, Wenk N, Gervais Y, Clairicia M, Frangos M, Gomez V, Burgel PR, Sermet-Gaudelus I, Valette J, Balli F. **Favoriser le soin autonome : encourager les jeunes vivant avec la mucoviscidose à partager leur expérience à travers la création de jeux collaboratifs. Réseau Mère-Enfant de la Francophonie; 2021** May 19; Lyon, France.
- Balli F. From discipline(s) to cooperation: five levers to transform education and research. **Open Education Day; 2021** April 24; Bern, Switzerland.
- Balli F. Building communities around a cause. **SDG innovation Bootcamp; 2019** Oct 25; Beijing, China.
- Balli F. Breathing Games On Air: Co-Creating a Board Game around the Breath. **Serious Play Conference; 2019** July 12; Montreal, Canada.
- Balli F, Frangos M. Respiratory health and air quality: fostering self and mutual care. **Gathering for Open Science Hardware; 2019** July 31; Toronto, Canada.
- Balli F. Des jeux qui inspirent : bien commun et innovation en santé. **Colloque jeux et éducation des Bibliothèques de Montréal et de la BAnQ; 2019** Feb 27; Montreal, Canada.
- Balli F. Game jams to co-design respiratory health games in Canada and Europe. Webinar. **Participatory Research at McGill Game Lab; 2018** Apr 3; Montreal, Canada. <https://youtu.be/LATVTHMIK8Q>
- Balli F. Commons and Breathing Games. **General Assembly of Observatoire des Mondes Numériques en Sciences Humaines; 2018** Jan 13; Paris, France.
- Balli F, Dugas B. Everyone should be able to adopt (lifesaving) health innovation. **OpenVillage Festival; 2017** Oct 20; Brussels, Belgium.
- Balli F. Les game jams comme méthode d'apprentissage expérientiel et de co-création interdisciplinaire. **Colloque international sur le jeu vidéo comme objet de recherche et médium pédagogique de l'Université de Lausanne; 2017** Oct 7; Lausanne, Switzerland.
- Balli F, Caignon P. Apprentissage transformationnel en éducation de la santé : de la gestion de la maladie à l'appropriation de la santé par la communauté. **Colloque La mesure et l'évaluation des apprentissages complexes en éducation médicale : défis et enjeux du Congrès ACFAS; 2017** May 12; Montreal, Canada.
- Balli F, Simon L, Frangos M, Fan LT, Folie A. Take a deep breath. **Canadian Finals of the Oxford University Global Challenge; 2017** Mar 25; Calgary, Canada.
- Balli F. Ensuring Everyone's Right to Respiratory Health: Participatory Research and Knowledge Co-Creation. **INDI research day of Concordia University; 2017** Mar 16; Montreal, Canada.
- Balli F, Valderrama A. Création collective de jeux libres en santé : communs, recherche participative et blockchain. **Colloque Applications mobiles en santé : des usages aux enjeux éthiques, déontologiques et juridiques du Réseau de recherche en santé des populations du Québec; 2016** Nov 22; Montreal, Canada. <http://youtu.be/Mmx9GdQ8ZEA>

- Balli F. Health & Play – Addressing together the challenges of creating an open source standard for Breathing Games. **12th International Symposium on Open Collaboration; 2016** Aug 17-19; Berlin, Germany.
- Balli F. Health & Play – Mobilizing citizens around breathing autonomy. **World Social Forum; 2016** Aug 3; Montreal, Canada.
- Balli F. Which psychosocial messages for a health game? **European Psychosocial Special Interest Group Meeting of the 39th European Cystic Fibrosis Conference; 2016** Jun 8; Basel, Switzerland.
- Balli F, Voirol C. breathinggames.net: vers un standard libre pour se soigner par le jeu. **Colloque Les sciences sociales et humaines au cœur de l'innovation – Innovation en santé du congrès ACFAS; 2016** May 12; Montreal, Canada.
- Thai M, Brastaviceanu T, Balli F. Nul n'est prophète en son pays - Pourquoi la Maison Blanche s'intéresse au modèle de Sensorica ? **Colloque de mobilisation des connaissances sur les thèmes de la collaboration et de l'innovation; 2015** Oct 15; Montreal, Canada.

Professional presentations

- Balli F. Co-creation during covid-19: prototyping health for everyone? **Public Health Switzerland; 2020** June 11; Bern, Switzerland.
- Balli F. Team-building and information flow for large groups such as online hackathons (Version 1.2). **EUvsVirus decision-making meeting; 2020** April 8, online. <https://doi.org/10.5281/zenodo.3744376>
- Balli F. Coronavirus hackathons: less efforts, more lives saved. **coronavirus-openkit.net; 2020** April 2, online. <https://doi.org/10.5281/zenodo.3737898>
- Balli F. Open Geneva and inclusion. **Fête de l'innovation; 2019** May 28; Geneva, Switzerland.
- Balli F. Breathing Games: population-driven health tech. **Eco2fest at PME MTL; 2018** Nov 5; Montreal, Canada.
- Dugas B, Balli F. Free/libre hardware. Conferenza OpenCare. **Digital Social Innovation and the Future of Care; 2017** Nov 22-23; Milano, Italy.
- Balli F. Jeux et matériel libres en santé respiratoire : enjeux de conception et de distribution. **Journée internationale du logiciel libre; 2017** Sept 16; Montreal, Canada.

- Balli F. Health & Play – Mobilizing citizens around breathing autonomy. **World Social Forum; 2016** Aug 3; Montreal, Canada.

Scientific posters

- Balli F, Jeanmaire G, Ibbotson R, Gervais Y, Kellner E, Gingras S, Gaudy T, Tse SM, Bransi M, Chelabi K, Silva-Lavigne N, Pelaez S, Montalbano L, Cilluffo G, la Grutta S, Sermet-Gaudelus I, Mohammad Y. **Open-source games for health, multiplayer and gamepads. Co-creating fun care with children with asthma, young adults with cystic fibrosis, elders with COPD. General Meeting of the Global Alliance against Respiratory Diseases; 2021** Oct 6-7. <https://doi.org/10.5281/zenodo.5515639>
- Kirszenbaum M, Lustre A, de Beauvais N, Hauterive M, Wenk N, Gervais Y, Clairicia M, Frangos M, Gomez V, Burgel PR, Sermet-Gaudelus I, Valette J, Balli F. Favoriser le soin autonome : encourager les jeunes vivant avec la mucoviscidose à partager leur expérience à travers la création de jeux collaboratifs. **Réseau Mère-Enfant de la Francophonie; 2021** Mai 18; Lyon, France. <https://youtu.be/ZHMKuNcmiQQ>
- Balli F, Jeanmaire G, Chelabi K, Kellner E, Gingras S, Gervais Y. Méthodes mixtes, jeux, matériel ouvert et traduction en santé. **Colloque méthodes mixtes francophonie; 2021** May 6; Montréal, Canada. <https://doi.org/10.5281/zenodo.4719734>
- Chelabi K, Balli F, Bransi M, Gervais Y, Marthe F, Tse SM. Validation of a portable game controller to assess peak expiratory flow against conventional spirometry in children. **Canadian Respiratory Conference; 2021** Apr 9; Ottawa, Canada. <https://doi.org/10.5281/zenodo.4680670>
- Balli F, Matringe M, le Couedic C, Schull J, Gautam S, Jandard P, Kellner E, Anastasaki A, Serada K, Brahmachari SK, Winter L, Lonchamp P, Schoeller F, Krishnakumar A, Greshake B, Lhoste K, Parot C, Jeanmaire G. **Health technology as commons: trustable, affordable, adaptable. Geneva Health Forum Open Village; 2020** Nov 16-18; Geneva, Switzerland. <https://doi.org/10.5281/zenodo.4327587>
- Balli F, Tse SM, Kirszenbaum M, Montalbano L, La Grutta S, Jeanmaire G, Gervais Y, Wenk N, Fangous D, Gaudy T, Marthe C, Bransi M, Gomez V, Robin JF, Clairicia M, Mendell M, Valderrama A, Kellner E, Martischang R, Caignon P. **Mutual care taking: collectively creating our respiratory wellbeing with open sciences. 13th General Meeting of the Global**

Alliance against chronic Respiratory Diseases – World Health Organization; 2019 Oct 25-27; Beijing, China.

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- Wenk N, Balli F. Breathing Games – Free/libre and open source games for respiratory health. **Gamification & serious game symposium 2019**; Jul 24; Neuchâtel, Switzerland.
- Balli F, Gingras S, Gervais Y. Air, breath and the co-creation of meaning. Can games help break free from limiting beliefs? **Annual Canadian Arts Therapy Conference; 2018** Oct 12; Montreal, Canada.
- Balli F, Gervais Y, Frangos M, Gaudy T, Valderrama A, Bransi M, Pache C, Tse SM. **Next-gen advocacy for respiratory health: fun, empowering, participatory, freely adaptable. 12th General Meeting of the Global Alliance against Respiratory Diseases – World Health Organization; 2018** Aug 31; Helsinki, Finland. <https://doi.org/10.5281/zenodo.1344629>
- Balli F et al. **When populations care about their respiratory health: a scalable bottom-up model to foster self-care for all. 11th General Meeting of the Global Alliance against Respiratory Diseases – World Health Organization; 2017** Nov 11; Brussels, Belgium. <https://doi.org/10.5281/zenodo.1344084>.
- Balli F, Gomez V. Science ouverte : les données de santé gérées par des réseaux d'utilisateurs. **Colloque Dédouaner les données ! Accès, utilisation et retombées pour la recherche en santé du congrès ACFAS; 2017** May 11; Montreal, Canada. <https://doi.org/10.5281/zenodo.1420487>
- Balli F, Maheu-Cadotte MA, Bouix J, Valderrama A, Vermeulen F, Wenk N, Tse SM, Burgel PR, Sermet-Gaudelus I, Martischang R, Kirszenbaum M, Frangos M, Ebnoether N, Gomez V, Gingras S. Évaluation par des méthodes mixtes de l'impact sociétal de Breathing Games, une communauté interdisciplinaire co-crétant des technologies libres en santé. **Colloque Les innovations en méthodes mixtes en sciences sociales et de la santé du congrès ACFAS; 2017** May 10; Montreal, Canada. <https://doi.org/10.5281/zenodo.1406778>
- Frangos M, Balli F. Breathing Games: Promoting Respiratory Health Through Co-creation. **European Academy of Design Conference; 2017** Apr 12-14; Rome, Italy.

- Balli F, Fan LT. Health Education: Playing and Creating Games. **Graduate Symposium in the Department of Education of Concordia University; 2017** Mar 25; Montreal, Canada.
- Valderrama A, Balli F, Tse SM, Gomez V. Développer des compétences en maladies chroniques à travers une application mobile conçue de manière innovante. **Journées annuelles en santé publique; 2016** Nov 21-22; Montreal, Canada.
- Tse SM, Valderrama A, Balli F, Gomez V. A free/libre mobile app in childhood asthma: knowledge transfer and self-assessment of symptoms and lung function. **Congrès québécois en Santé respiratoire; 2016** Oct 11-14; Montreal, Canada.
- Balli F, Gomez V. Therapeutic adherence: exploring Open Collaboration to mobilize all stakeholders behind children with CF. **European Cystic Fibrosis Conference; 2016** Jun 8-11; Basel, Switzerland.

Panels

- Penjore S, Morenets Y, Balli F, Ekyarisiima C (panelists), Stankovic V (facilitator). The Coronavirus Response – ICT Case Repository. **World Summit on the Information Society; 2021** Mar 23. <https://www.itu.int/net4/wsis/forum/2021/Agenda/Session/215>
- Balli F, Falcon L, Groh A (panelists), Sandler K (facilitator). Software and Hardware Freedom in Health Public Policy. **FOSDEM; 2021** Feb 7. <https://fosdem.org/2021/schedule/event/healthpublicpolicy/>
- Bastianelli G, Poughia E, Cossi M, Balli F (panelists), Nothnagel A, Moro L (facilitators). Hack your Science. **Young European Biotech Network; 2021** Feb 3.
- Balli F, Dosemagen S, Knäpper I, Niggli N, Nimkar R (panelists), Michel S (facilitator). **Geneva Solutions: Meet the Makers of a Better World 2019**; Mar 20, Geneva, Switzerland.
- Brastaviceanu T, Balli F, Frangos M. Open Science and Innovation. **9th Canadian Science Policy Conference; 2017** Nov 3; Ottawa, Canada. <https://youtu.be/fP32bzSh-fs>

Exhibitions

- La Grutta S, Montalbano L, Gervais Y, Balli F. **Notte europea dei ricercatori; 2019** Sept 27; Palermo, Italy.

- Frangos M, Balli F. Gathering for Open Science Hardware. **Public demo and seminar at the University of Toronto; 2019** July 31; Toronto, Canada.
- Wenk N, Pierson A, Balli F. Breathing Games Free/libre and open source games for respiratory health. **Exhibition at the Gamification & serious game symposium 2019**; Jul 24; Neuchâtel, Switzerland.
- Frangos N, Frangos M, Gervais Y, Balli F. Breathing Games – Une planète où chacun peut respirer librement. **50e anniversaire de la Faculté de l'aménagement de l'Université de Montréal; 2018** Oct 26; Montreal, Canada.
- Balli F. Breathing Games. **World Summit on the Information Society Forum; 2018** Apr 11, Geneva, Switzerland.
- Balli F et al. Des jeux pour souffler ? Game jam Breathing Games. Series of five posters. **OpenGeneva Festival; 2018** Apr 15; Geneva, Switzerland. <https://doi.org/10.5281/zenodo.5525249>
- Balli F, Ebnoether N. Breathing Games. **Congrès du Regroupement provincial des comités des usagers; 2016** Oct 20; Laval, Canada