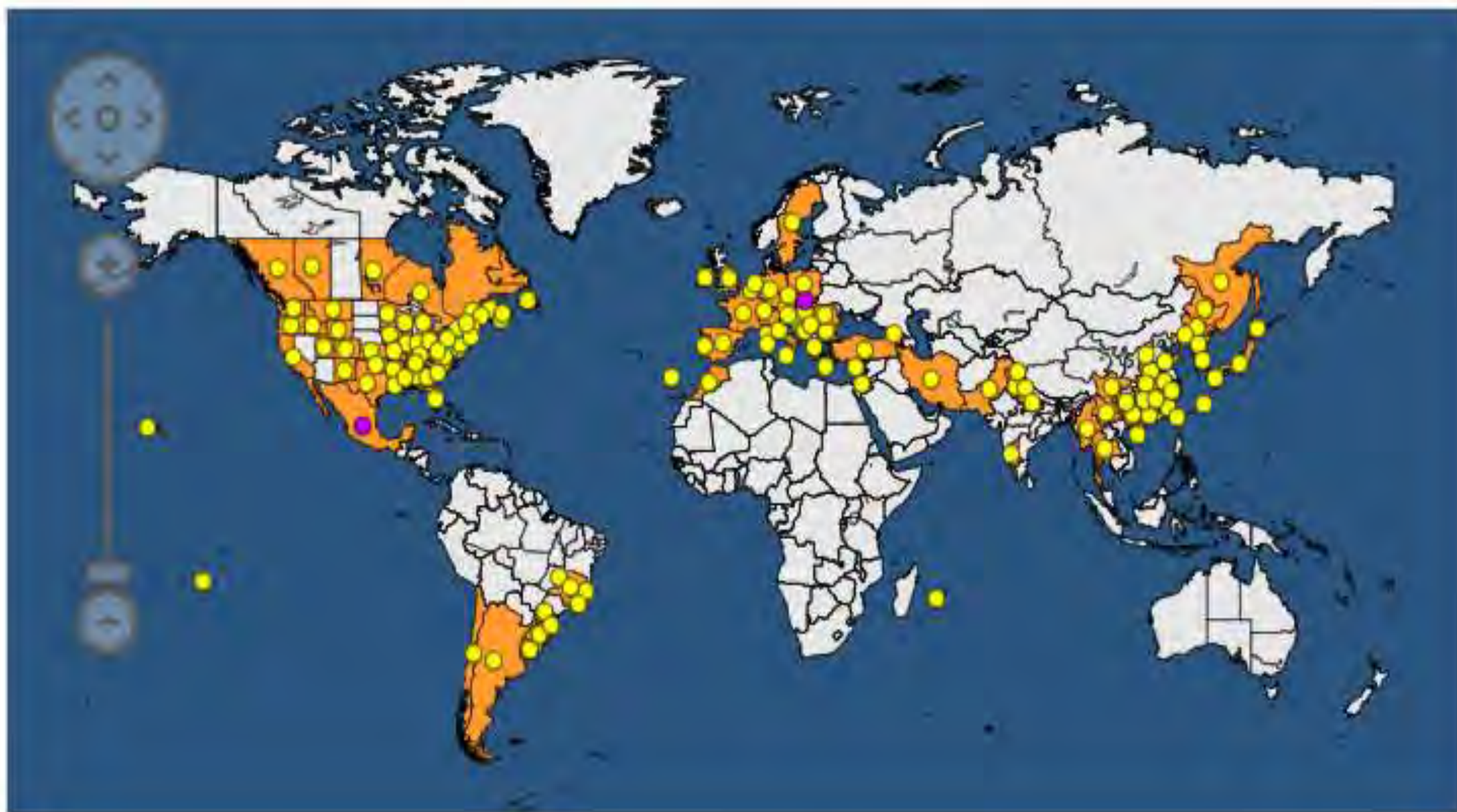


# **Emergence of New Technologies: Progress and challenge in SWD management**







**Why do we care about SWD?**



# *Drosophila suzukii*

many generations per year

With as **many** as **13 generations per** season, and the ability for the female to lay up to 300 eggs each, the potential population size of *D. suzukii* is huge

long migration ability

Recently, studies of the dispersal ability of *D. suzukii* over extended periods have demonstrated that *D. suzukii* flies are **able** to fly up to 9000 m away from the marking point over their entire lifetimes and that seasonal breezes likely facilitate **long-distance** movement

daily dispersal ability

*D. suzukii* is able to perform daily **movement between the crop** and the **surrounding vegetation**

pesticide resistance

*D. suzukii* is developing genetic **resistance towards chemicals**





**Spotted Wing Drosophila, *Drosophila suzukii* (Diptera: Drosophilidae), Trapped with Combinations of Wines and Vinegars**

Author(s): Peter J. Landolt, Todd Adams, Thomas Seth Davis and Helmuth Rogg

**Exclusion Netting Delays and Reduces *Drosophila suzukii* (Diptera: Drosophilidae) Infestation in Raspberries**

[Heather Leach](#) ✉, [Steven Van Timmeren](#), [Rufus Isaacs](#)

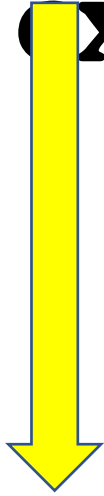
**Host stage preference, efficacy and fecundity of parasitoids attacking *Drosophila suzukii* in newly invaded areas**

M. Valerio Rossi Stacconi <sup>a</sup>, Matt Buffington <sup>b</sup>, Kent M. Daane <sup>c</sup>, Daniel T. Dalton <sup>d</sup>, Alberto Grassi <sup>a</sup>, Gülay Kaçar <sup>c,e</sup>, Betsey Miller <sup>d</sup>, Jeffrey C. Miller <sup>d</sup>, Nuray Baser <sup>f</sup>, Claudio Ioriatti <sup>a</sup>, Vaughn M. Walton <sup>d</sup>, Nik G. Wiman <sup>d</sup>, Xingeng Wang <sup>c</sup>, Gianfranco Anfora <sup>a,\*</sup>

**Development of an Attract-and-Kill Strategy for *Drosophila suzukii* (Diptera: Drosophilidae): Evaluation of Attracticidal Spheres Under Laboratory and Field Conditions**

[Kevin B. Rice](#) ✉, [Brent D. Short](#), [Tracy C. Leskey](#) [Author Notes](#)

# Consumer and grower expectations are changing



## Health fruits

Ex. >60% blueberry crops in Oregon are organic certified



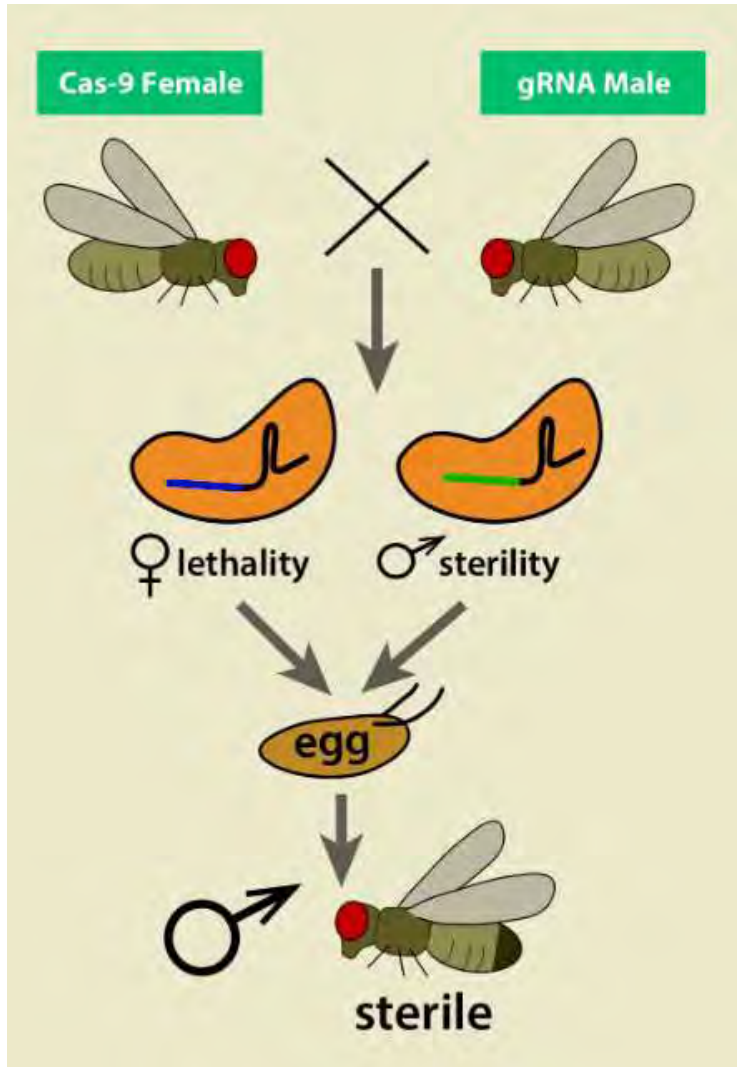
## Health environment

Ex. In France all the 5 **nicotinoids** (clothianidin, imidacloprid, thiamethoxam, thiacloprid and acetamiprid) are **banned**



# Emergency of new technologies

CRISPR-based technology



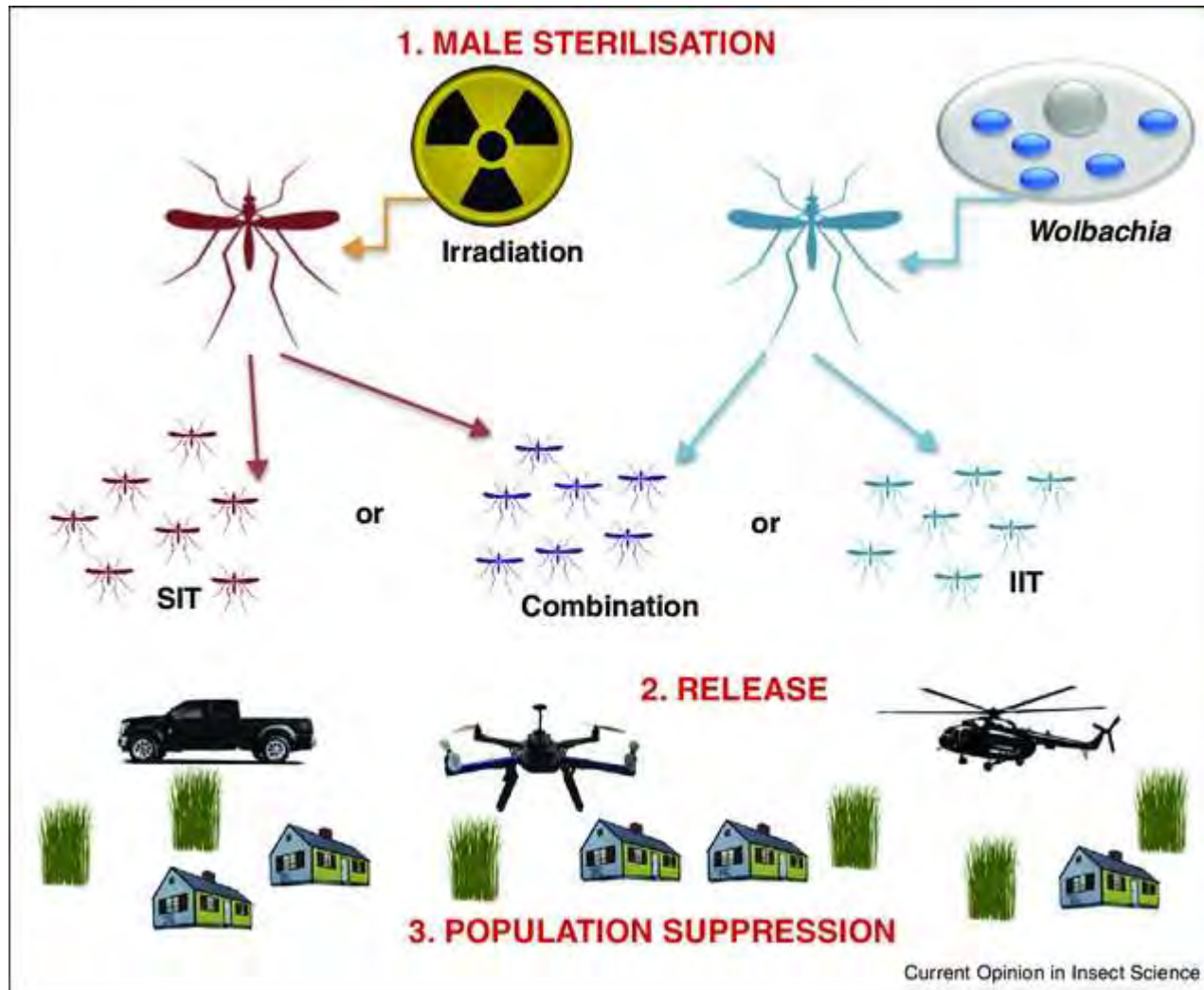
**Highly efficient Cas9-mediated gene drive  
for population modification of the malaria vector  
mosquito *Anopheles stephensi***

Valentino M. Gantz,  Nijole Jasinskiene, Olga Tatarenkova, Aniko Fazekas,  
Vanessa M. Macias, Ethan Bier, and Anthony A. James



# Combining sterile and incompatible insect techniques for the population suppression of *Drosophila suzukii*

K. Nikolouli, F. Sassù, L. Mouton, C. Stauffer, K. Bourtzis



The sterile insect technique (**SIT**), incompatible insect technique (**IIT**) or a combination of the two could be used to suppress populations. Male are sterilised either by the application of irradiation or (trans)infection with *Wolbachia*, or both, and then released into the target population to sterilise the wild females

Back to the future: the sterile insect technique against mosquito disease vectors

Rosemary Susan, Lees Jeremie, RL Gilles, Jorge Hendrichs, Marc JB Vreysen, Kostas Bourtzis

<https://doi.org/10.1016/j.cois.2015.05.011>



# Yeast Species, Strains, and Growth Media Mediate Attraction of *Drosophila suzukii* (Diptera: Drosophilidae)

[Rodrigo Lasa](#),<sup>1,\*</sup> [Laura Navarro-de-la-Fuente](#),<sup>2</sup> [Anne C. Gschaedler-Mathis](#),<sup>3</sup> [Manuel R. Kirchmayr](#),<sup>3</sup> and [Trevor Williams](#)<sup>1,\*</sup>

## Novel techniques to control the invasive *Drosophila suzukii* fly

LAST CHANGED: 11 OCTOBER 2019

This project develops new techniques to control one of the most severe pests on berries and soft-skinned fruit, the spotted-wing *Drosophila*, *D. suzukii*.

Control of *Drosophila suzukii* demands a basic understanding of the pest's ecology and physiology. This will in turn guide the development of highly efficient



*Hanseniaspora uvarum*

# Drones: Innovative Technology for Use in Precision Pest Management

Fernando H Iost Filho, Wieke B Heldens, Zhaodan Kong, Elvira S de Lange ✉

Parasitoids release

SIT insect release

Bacteria release



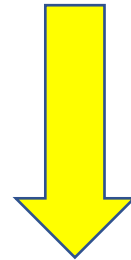
# Role of a scientist



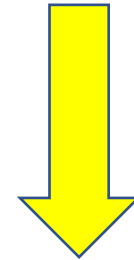
Someone  
who studies a subject, especially in order to discover new information or reach a new understanding (Cambridge dictionary)

A researcher is someone who conducts *research*, i.e., an organized and systematic investigation into something (Vocabulary.com)

A person who studies something carefully and tries to discover new facts about it (Oxford dictionary)



Test, validate and  
improve something  
already in use



Try to discover and  
invent new approaches



February 14, 2020

ECONOMIA TRENTO



«La Fondazione Mach ha da qualche giorno un nuovo presidente: da Andrea Segrè a Mirco Cattani

# Segrè al veleno: «Genomica? Tanti soldi, pochi risultati»

**L'addio.** Lunga (e durissima) lettera di commiato dell'ex presidente ai dipendenti di Fem: «Diffusa parentopoli al mio arrivo. Creata una filiera didattica e ricerca unica nel suo genere»

TRENTINO

QUOTIDIANO FONDATA NEL 1945

ALTO ADIGE

Il «Sessantotto» della Chiesa arriva con Ga

AUTONOMIA, QUI SI GIOCA CON IL FUOCO

di Flavio Mosconi

«Il mio Ho il vi curricu

L' intervista. L'ormai ex presidente: «Con me raggiunti 12 milioni di autofinanziamento»

CARLO BRIDI

TRENTO. Presidente Segrè dopo 5 anni finisce, come ha scritto qualcuno, la sua era? Più che un'era è stata una straordinaria esperienza umana e professionale. Molto complessa vista l'eredità che mi sono ritrovato nel 2015. Come ho scritto ai dipendenti, quando sono arrivato il "clima aziendale" era pessimo fra i tentativi di conciliazione, ricorsi al giudice del lavoro, squilibri tra dipendenti, blocco delle progressioni, progressivo calo dei trasferimenti P.A.T... Con un ottimo lavoro di squadra - Cda e dirigenti - siamo riusciti a riportare Fem in una situazione prima di stabilità e poi di crescita.

Eppure l'hanno accusata che sotto la sua presidenza c'è

TRENTINO

QUOTIDIANO FONDATA NEL 1945

REDAZIONE ROVERETO: PIAZZA AGRICOLA LEONI, 22 TEL. 0464/427515

REDAZIONE RIVA D. GARDA: VIALE ROMA, 4 TEL. 0464/755141

GENNAIO 2018

16 Martedì

1 Lunedì S. Madre di Dio

2 Martedì S. Basilio V.

3 Mercoledì



Andrea Segrè



## Definitions

"Invention is the creation of a new device, process, or product".

The Discovery School site

"an original device or process".

The Merriam-Webster Dictionary

### Invention and Innovation

- **Invention** means having a totally original idea and showing how it can work in theory
- **Innovation** means putting a new idea into practice. This could be either bringing a new product to the market or by getting an organisation to try a new way of working

## INVENTION

Two roads diverged in a wood, and  
I took the one less traveled by,  
And that has made all the difference

Robert Frost, from "The road not taken"

1874-1963



night.  
**inventor** /in'ventə(r)  
a person who makes  
thing new



*'Farmers are the world's best inventors.  
They innovate around problems because  
they have to – they are the definition of  
'if its to be, its up to me''*

Pearse Lyons, Alltech Founder

To be an inventor, you have to be  
willing to live with a sense of  
uncertainty, to work in this  
darkness and grope towards an  
answer, to put up with anxiety  
about whether there is an answer.

Ray Dolby

1933-2013

PICTUREQUOTES.COM

Neil Portnow: "Dolby changed the way we  
listen to music and movies for nearly 50  
years".

PICTUREQUOTES



June 2017

Gum

Agar Gum



June 2019

Fun





June 2020

Sun



**Collaboration**

**Loyalty**

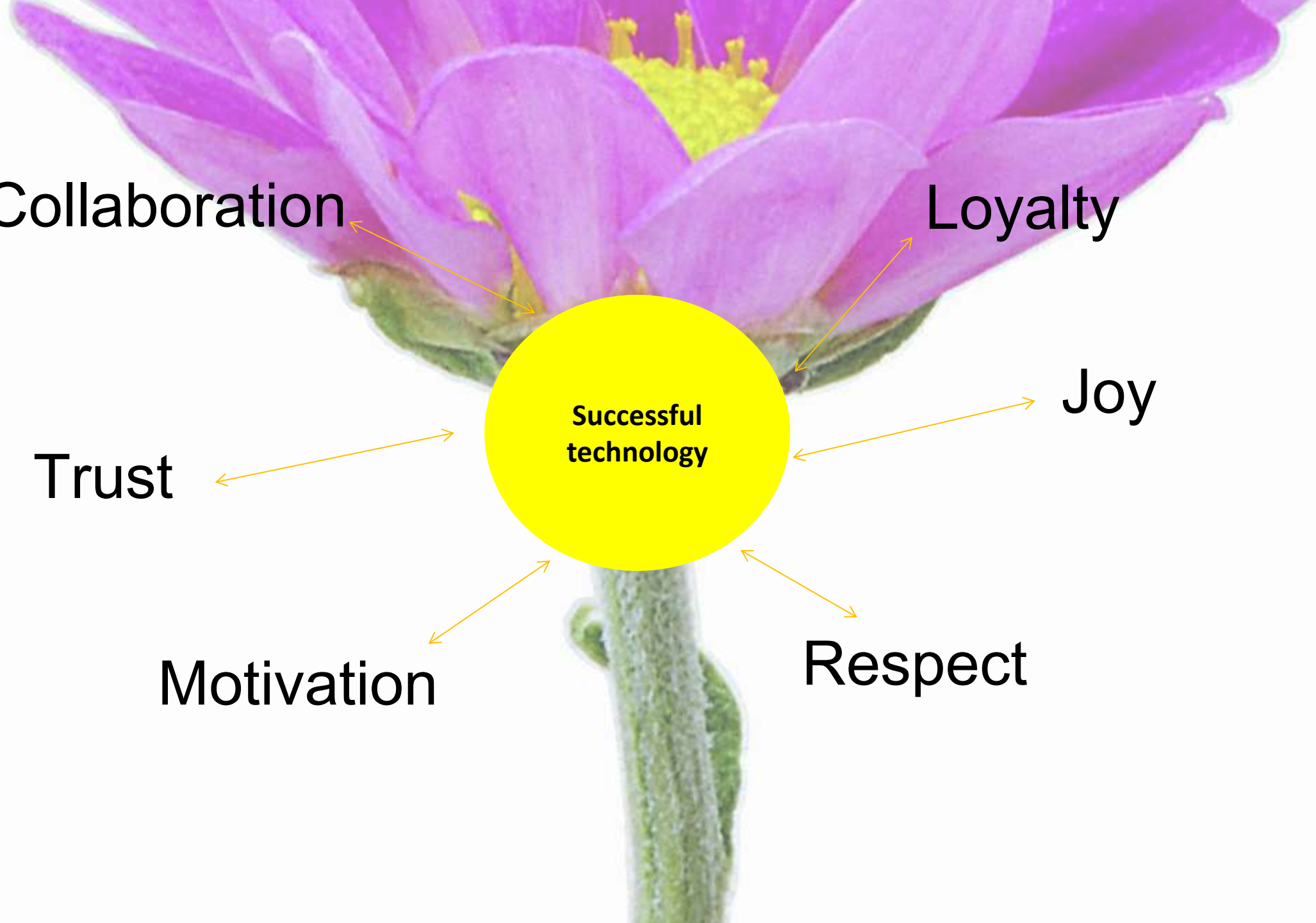
**Joy**

**Respect**

**Motivation**

**Trust**

**Successful  
technology**



**Invention is the origin of a  
new species: constantly  
under selection,  
enough different to be a new  
lineage, and well-adapted  
to survive enough time  
before being outdated by a  
new inventions**

G.T.

Coronavirus solutions



All



News



Images



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Settings

Tools

About 401,000,000 results (0.59 seconds)

www.nature.com › correspondence

## Coronavirus: global solutions to prevent a pandemic - Nature

Feb 18, 2020 - Investment in research must be fast-tracked if we are to tackle the new **coronavirus** disease, COVID-19. We need greater insight into the transmission, ...

addition, researchers have sought to find economically viable **solutions** for the ...



**Thanks!**

