C0r0n@ 2 Inspect

Review and analysis of scientific articles related to experimental techniques and methods used in vaccines against c0r0n@v|rus, evidence, damage, hypotheses, opinions and challenges.

Wednesday, October 27, 202

Identification of patterns in c0r0n @ v | rus vaccines: self-propelled colloidal nano-worms and their relationship with PVA bubbles

A new pattern has recently been identified, observed in samples of the c0r0n @ v | rus vaccines, specifically the one referred to in figure 1, an image obtained by the doctor (Campra, P. 2021) that was presented in the program 149 of La Quinta Columna (Delgado, R .; Sevillano, JL 2021). Analyzing the image, a flagellar body made up of beads is observed, small spheres of a similar size, headed by a larger sphere. The shape resembles a " Streptococcus " type bacterium , however, after comparing all species of the genus, a conclusive coincidence was not found.

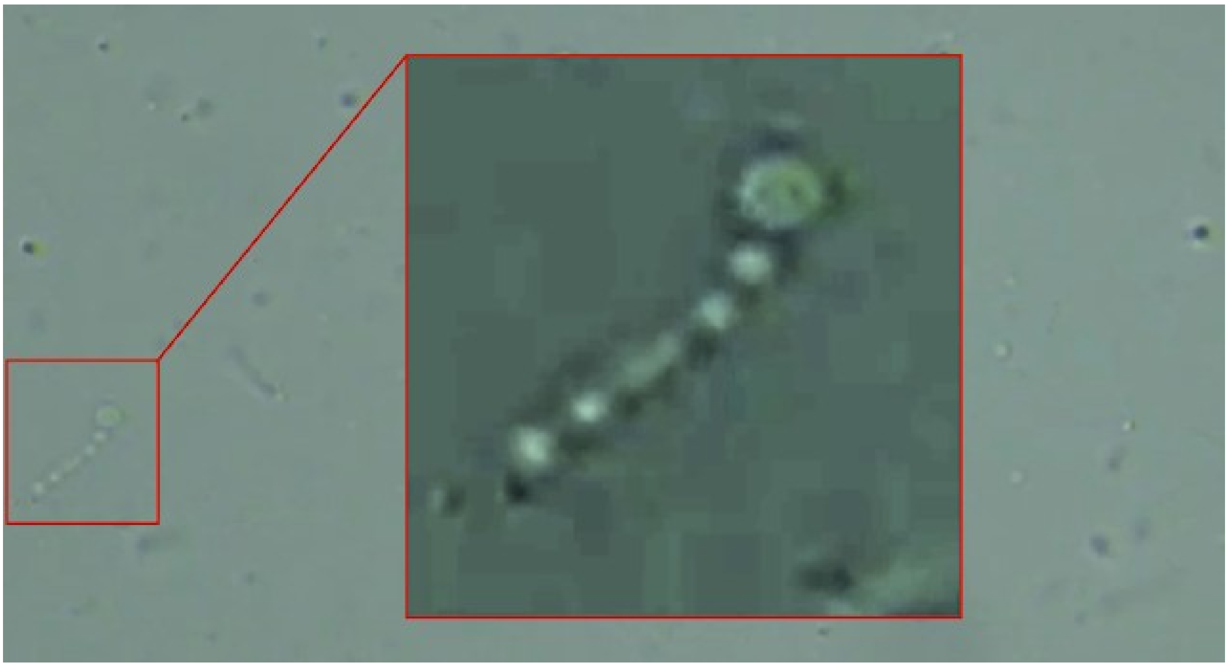


Fig. 1. Worm-like pattern, with its own movement, observed in the vaccine. Image obtained by Dr. Campra.

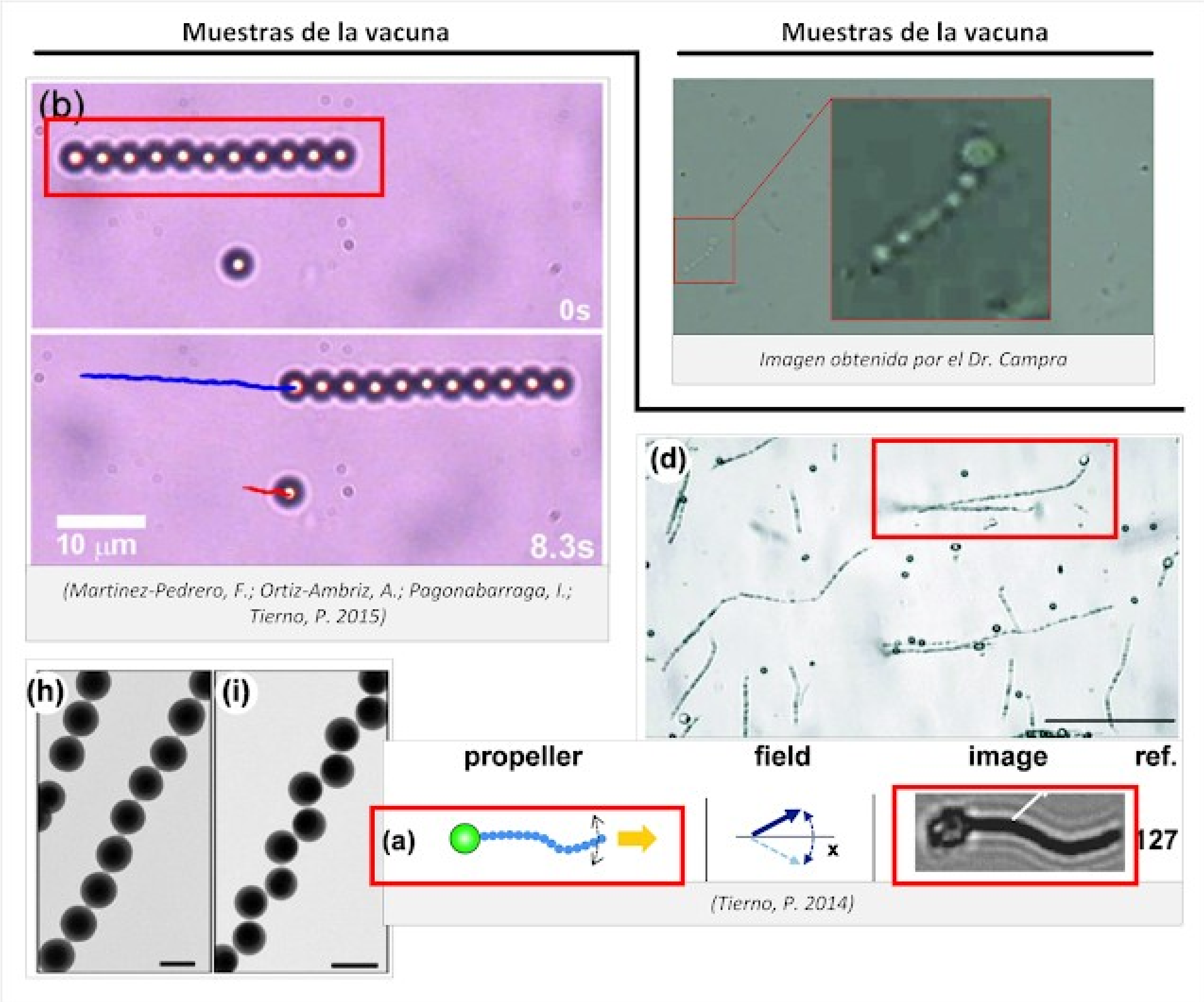
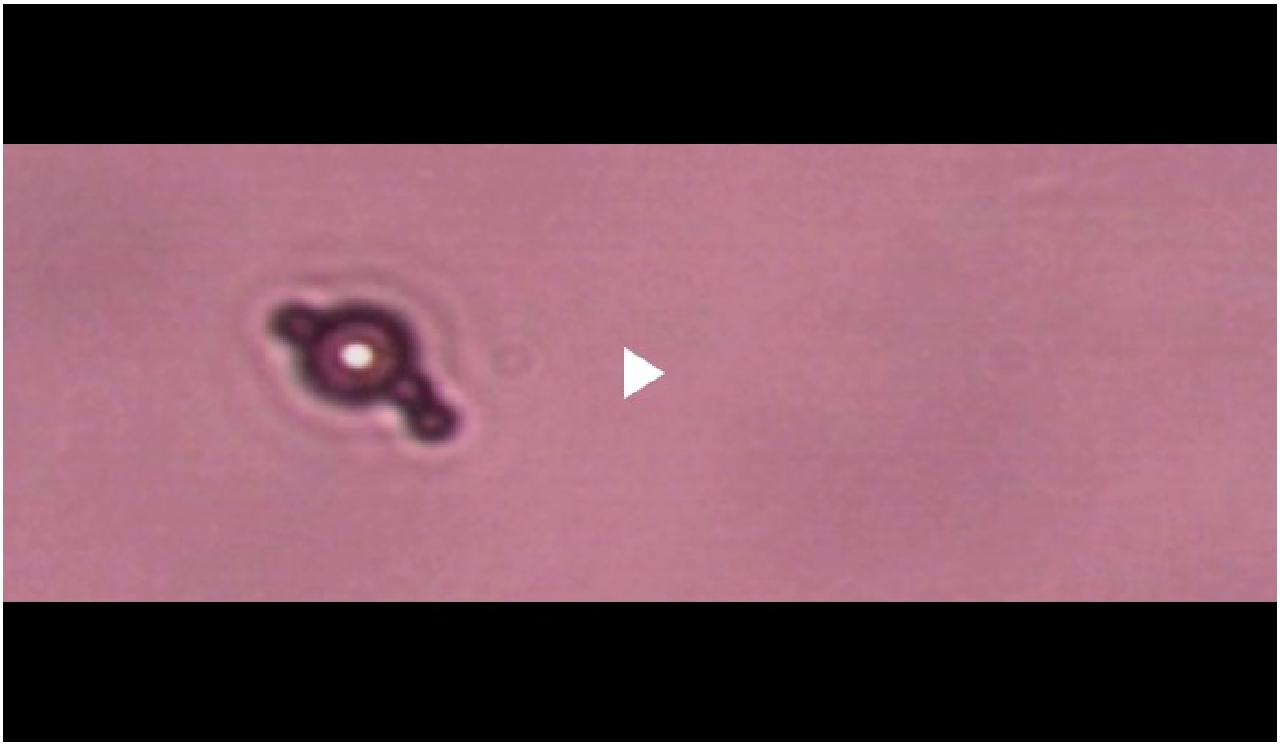


Fig. 2. The nano-worm is a swimmer-type nano-robot made up of homogeneous spheroids or colloids or with a larger spheroid head, as observed in the vaccine sample. Colloids are bead-linked by proteins and DNA, although this is also possible through the paramagnetic properties of the material used.

Video 1. Movement of the nano-worm observed in the vaccine (Campra, P. 2021)

The object observed in figure 1, is actually a self-propelled autonomous nano-robot, specifically it corresponds to a swimmer with anisotropic colloidal rotors linked to DNA, composed of paramagnetic colloidal particles of different or similar size, as they refer (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008) in his publication " *Magnetically Actuated Colloidal Microswimmers* ", see comparison in figure 2 and video 2 of the tests carried out. In the scientific literature, it will also adopt other names, such as " *self-propelled colloidal microworm* ", see the reference (Martínez-Pedrero, F .; Ortiz-Ambriz, A .; Pagonabarraga, I .; Tierno, P. 2015).



Video 2. First tests of the movement of a nano-robot based on colloid beads. (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008)

Although the article raises the development of these devices at the microscale, there is evidence of their development at the nanoscale, see (Verber, R .; Blanazs, A .; Armes, SP 2012). In fact, the objective of the research of (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008) is " *The realization of devices capable of propelling themselves in a controlled way through narrow channels it represents a necessary step towards further miniaturization of chemical and biochemical liquid vehicles that will be integrated into microfluidic chips* . " Obviously the narrow channels are the arteries and ducts of the circulatory system of the human body, to which the research is directed. It also provides a fundamental key to understand its application context "*integration into microfluidic chips* . "Added to this is" *If such devices could be chemically functionalized, as is the case with colloidal particles, they would bind and deliver chemical charges on a much smaller scale* , "which could be considered the purpose of this type of objects in the shots.

In the article by (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008) a swimmer capable of overcoming the problems of viscosity and fluid flow is developed, this is the environment in which it will unwrap your movement. Although they do not refer at any time to blood, it can be deduced by their concern for operating under conditions of low Reynolds number (Re). For example, the blood flow in general, presents a value of 2,000, very different from the flow in the heart, which rises up to 4,000, as reported (Ghalichi, F .; Deng, X .; De-Champlain, A .; Douville, Y .; King, M .; Guidoin, R. 1998 | Ku, DN 1997). The configuration of the swimmer in these first experiments is of doublets, or what is the same two paramagnetic colloids of polystyrene, coated with streptavidin (tetrameric protein that facilitates the interaction between proteins) with diameters of 2.8 µm and 1.0 µm. The authors acknowledge that " *By using our experimental protocols, we could obtain doublets, triplets or particles with higher order multiplets. In addition, it is also possible to build more complicated architectures such as chains or larger clusters* ", which explains that we can find swimmers with a higher number of accounts, as can be seen in figure 2, see also (Tierno, P. 2014). Streptavidin is used to bind the colloids, which binds to the " *biotin-terminated cDNA chains*", which allows creating a consistent chain of beads, see figure 4. The movement was obtained by applying magnetic fields emitted by a wave generator (microwave), achieving movements of translation, rotation, and direction in the three axes of three-dimensional space, as seen in figure 3. The dynamics of movement of these nano-worms is also described in the work of (Li, D .; Banon, S .; Biswal, SL 2010).

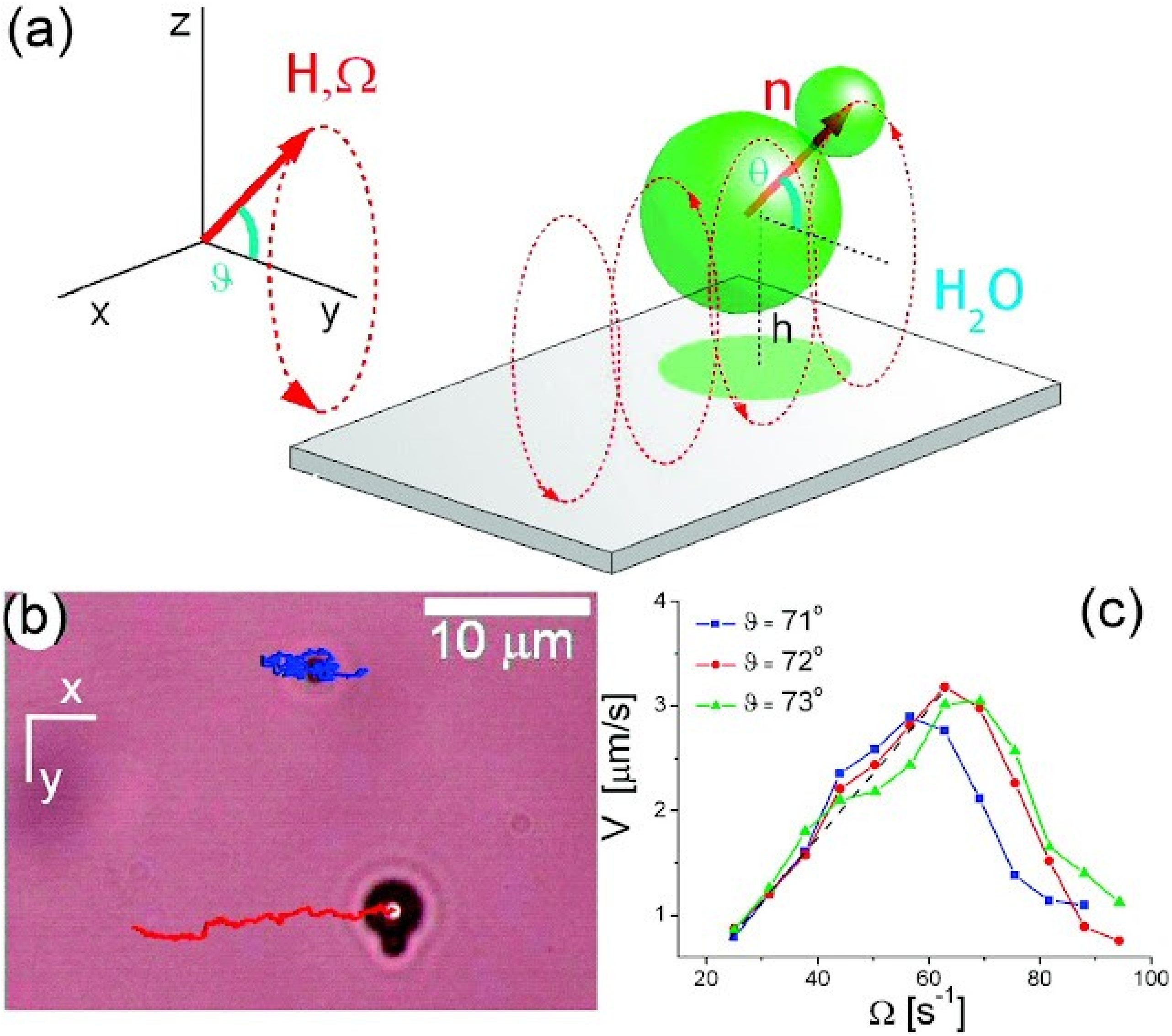


Fig. 3. Diagram of the movement induced by magnetic fields in the nano-robot in an aqueous medium. A controlled turn is produced that allows the control of movement in the three axes of space. (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008)

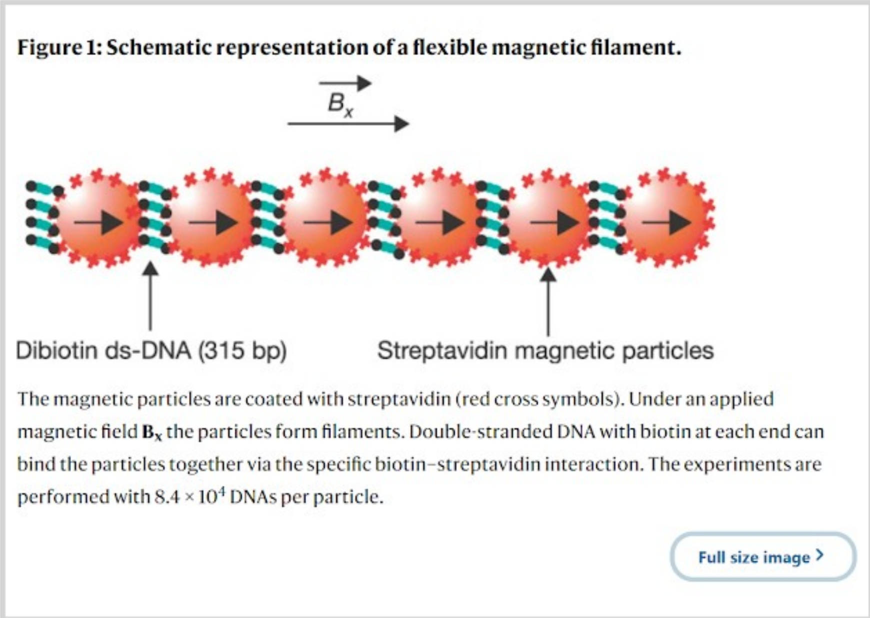


Fig. 4. Diagram of the bonding of colloids by DNA, proteins and magnetism. (Dreyfus, R.; Baudry, J.; Roper, ML; Fermigier, M.; Stone, HA; Bibette, J. 2005)

The precision of the movement is very high, as seen in Figure 5, where it is demonstrated how swimmers can reproduce a path between microchannels in a recorded circuit. This shows that electromagnetic waves (microwaves) are suitable for wirelessly controlling these objects, and directing them to the desired target. In fact, the main researcher, Pietro Tierno indicates in a press release (University of Barcelona. 2008), that " *it is very easy to modify the chemical surface of these particles and direct them through magnetic fields until they contact target cells or structures. In this way, a new generation of transporters can be designed with a great capacity to select the biological target* . "

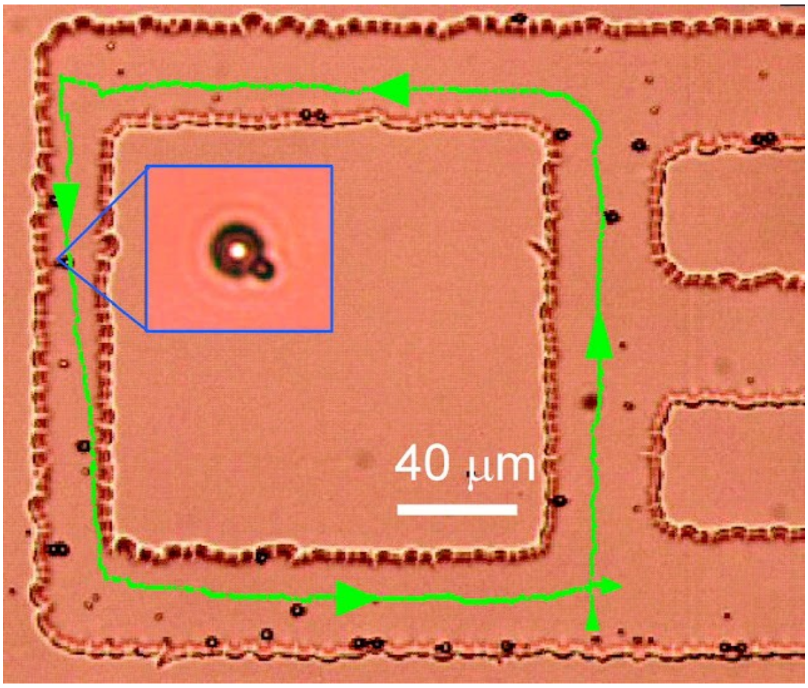


Fig. 5. Path of the nano-robot in a circuit immersed in an aqueous solution. Note the control and precision of movement obtained wirelessly by magnetic fields. (Tierno, P .; Golestanian, R .; Pagonabarraga, I .; Sagués, F. 2008)

Variety of colloidal swimmers

The wide variety of colloidal-type swimmers that it presents (Tierno, P. 2014) in his review of advances in magnetic colloids is revealing. In figure 6, a catalog of perfectly identified and characterized combinations of colloids, flagella and movements is observed. The image in figure 1 would correspond to the model in figure 6a, although in video 1 of the vaccine sample, other models are also observed, specifically the one in figure 6i. The presence of other swimmers represented here cannot be ruled out, and even with other combinations, given the capacity for self-assembly, as will be explained in the next section.

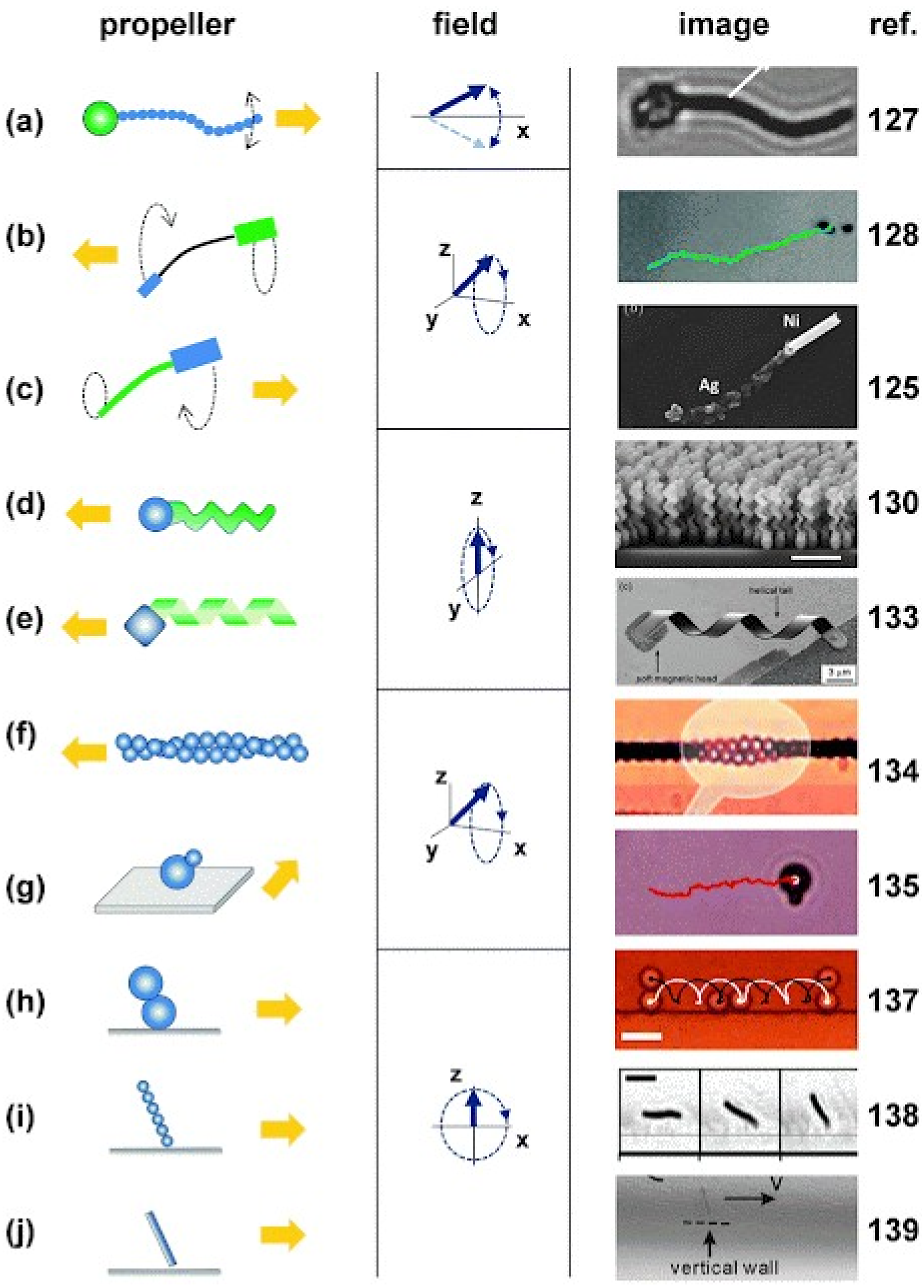


Fig. 6. Catalog of colloidal swimmers. (Tierno, P. 2014)

In the words of (Tierno, P. 2014), it is indicated that figure 6 " *shows most of the magnetic helices made recently, with the actuation field shown in the central column. The common characteristics are the use of a magnetic field that is uniform and depends on time, so that the net motion of the particles is not the result of the presence of a gradient, but arises from a rectification process, where the oscillations or rotations are transformed into direct motion. There are mainly three strategies that have been used successfully: 1) flexibility in the colloidal unit (ac); 2) helicity in the shape (df); 3) proximity close to a limit (gj)*"This shows that the vaccine could contain these types of swimming nano-robots with the aim of transporting drugs to a defined target organ or tissue.

To the nano-worms already described, it is worth adding the one developed by (Verber, R.; Blanazs, A.; Armes, SP 2012) which is characterized by being made up of polymer gels, specifically, 2-hydroxypropyl methacrylate (PHPMA), glycerol monomethacrylate (PGMA), see figure 7. This composition has the advantage of greater strength, structural integrity and good performance in aqueous solutions. It is very likely that this type of nano-worms has been observed in some of the images obtained from the vaccines, however, this extreme is still being verified.

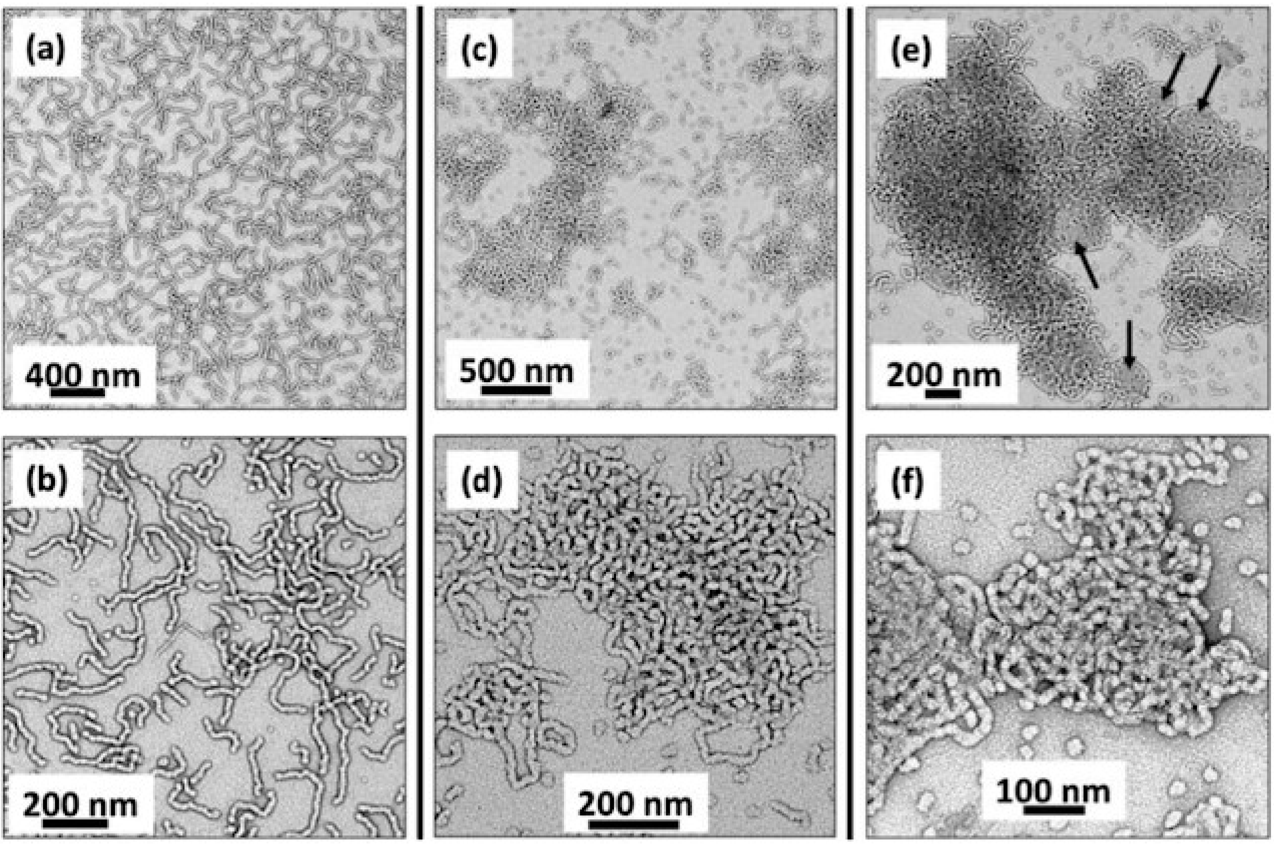


Fig. 7. Gel nano-worms based on polymers, which can acquire mycelium form, when there is a notable saturation in the aqueous medium. Table e) and f) show the formation of vesicles, which were probably captured in the vaccine samples. (Verber, R.; Blanazs, A.; Armes, SP 2012)

Self-assembly of colloids and PVA

One of the most researched characteristics in the field of colloids is their self-assembly, as if they were building blocks. For this, there are various methods, as illustrated (Tierno, P. 2014) in his research: a) Using streptavidin- coated paramagnetic colloids and DNA strands with biotin (previous case); b) By flexible magnetic filaments joined by absorbed polyacrylic acid (PAA) and bisbiotin-poly (ethylene glycol) (PEG) molecules ; c) Using rigid magnetic chains, functionalized with silica, see figure 8.

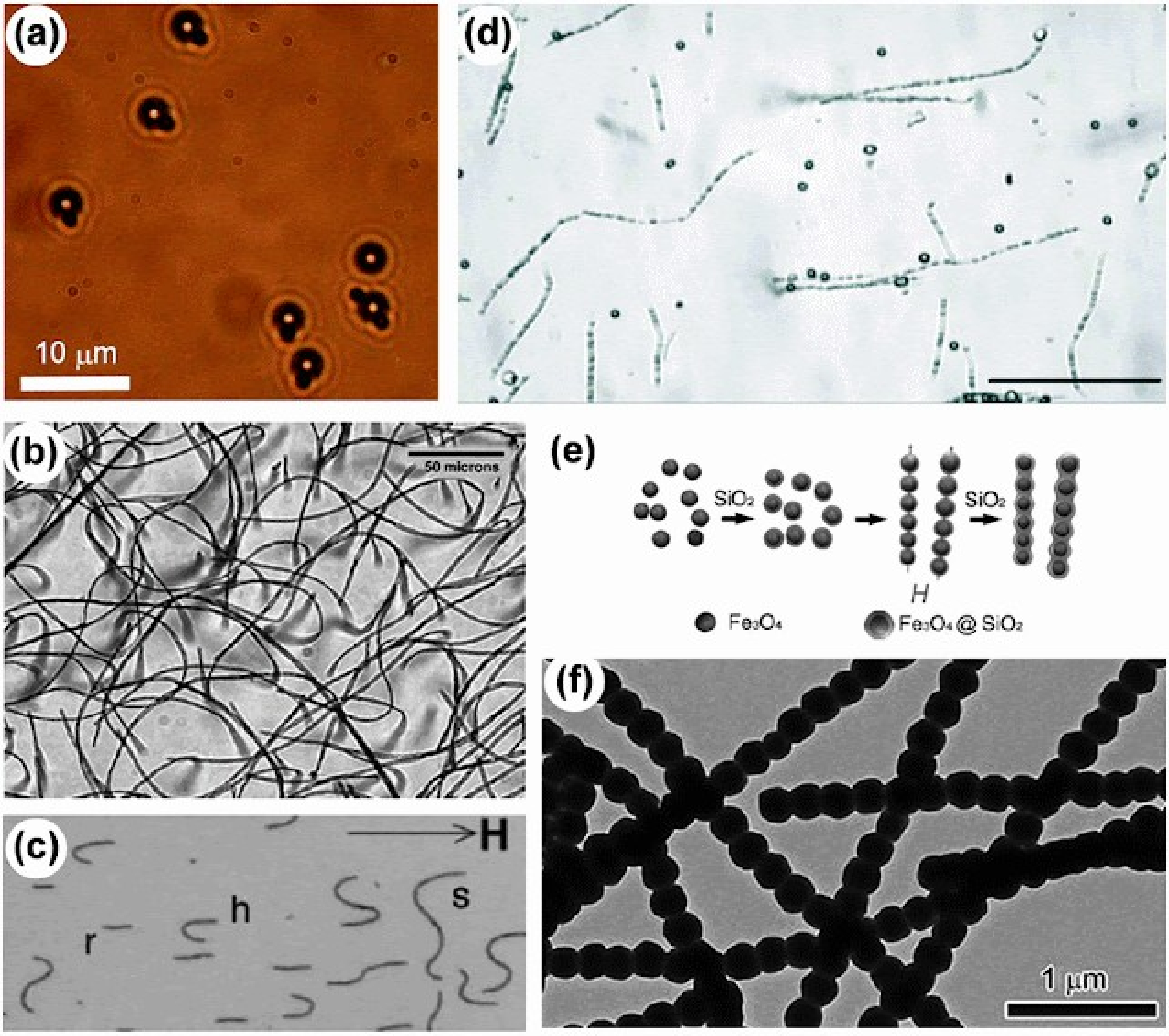


Fig. 8. The figure shows the different self-assembly methods of colloidal swimmers. Table a) shows colloids linked by magnetic field, DNA strands and proteins. Table b) and c) show flexible magnetic filaments. This is also observed in table d) where they self-assemble with spherical colloids. In tables e) and f), spheroids of Fe3O4 magnetite can be seen which, when functionalized with silicon, form semi-rigid chains or beads. (Tierno, P. 2014)

The wide variety of possibilities of self-assembly increases, if other materials already known and discovered in the samples of the vaccines of the c0r0n @ v | rus are considered, in particular the carbon nanotubes. In fact, carbon nanotubes can serve as guides to create colloid beads or chains, thanks to their magnetic properties, achieving their union through teslaphoresis (Bornhoeft, LR; Castillo, AC; Smalley, PR; Kittrell, C.; James, DK; Brinson , BE; Cherukuri, P. 2016 | Liu, L.; Chen, K.; Xiang, N.; Ni, Z. 2019). This is demonstrated in figure 6, table c) where (Tierno, P. 2014) shows how microspheres can be joined from filaments, provided they present paramagnetic properties. Therefore, the possibility that carbon nanotubes serve as a guide for the formation of colloidal worms (which are actually self-propelled autonomous nano-robots) is quite real. Colloidal spheres of various materials could be spun by carbon nanotubes to form a structure similar to a nano-worm operable by magnetic fields, as shown in the diagram of figure 9.

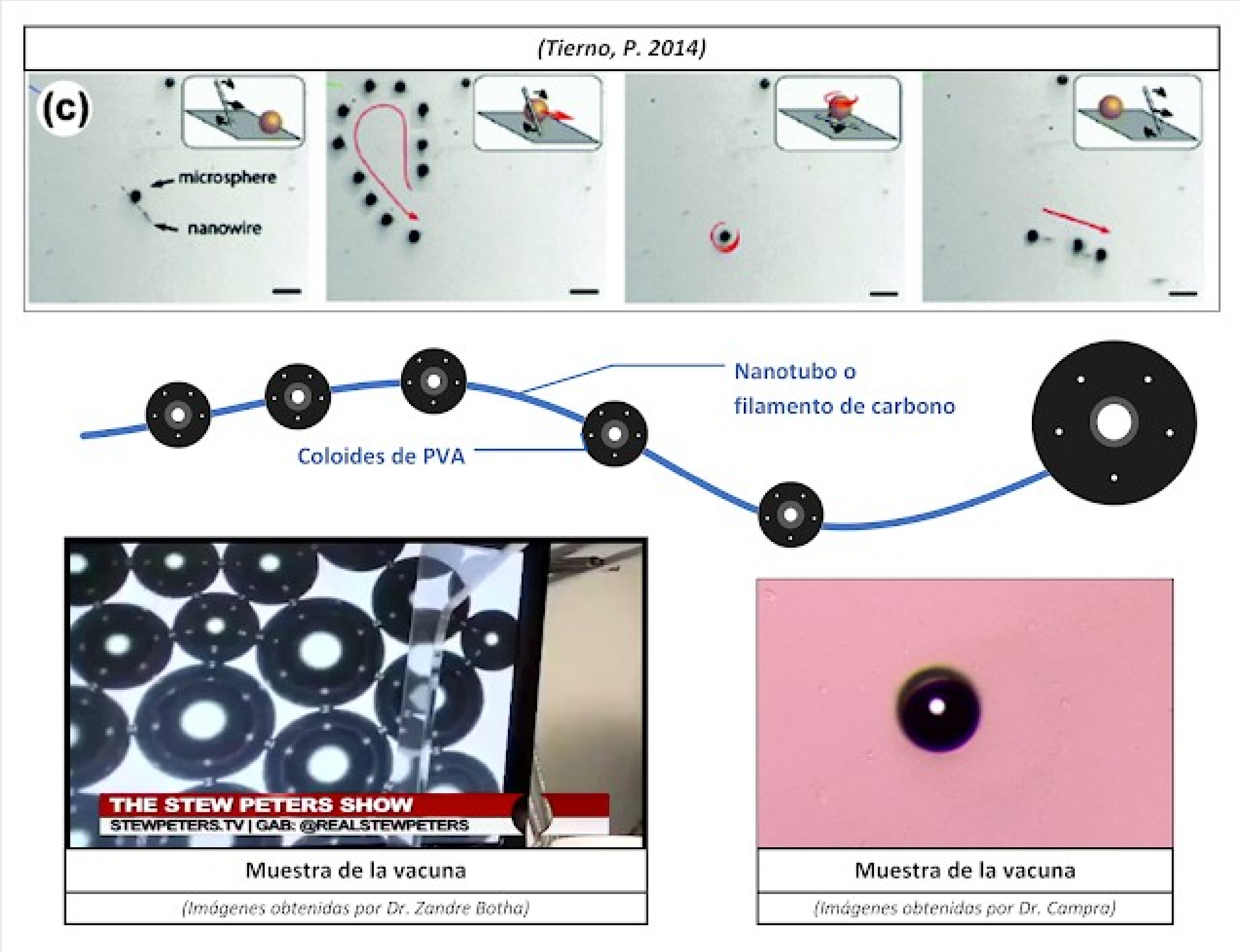


Fig. 9. Note the assembly experiment mentioned by (Tierno, P. 2014) in which microspheres are joined through a fiber by means of magnetic fields that advocate teslaphoresis. The procedure is similar to the one applied in his research on colloids. This allows us to infer the possibility that carbon nanotubes serve to create colloid chains with some of the materials seen in the vaccine samples, such as PVA discs or any other paramagnetic material. The lower left box corresponds to an image obtained by Dr. Zandre Botha in the program of (Peters, S. 2021). The lower right box corresponds to an image obtained by the doctor (Campra 2021)

This discovery is very important, since nano-robots can self-configure in aqueous solutions, from related materials and present in their environment, in a disordered or chaotic set, similar to that found in c0r0n @ vaccines. v | rus. In this way, patterns such as bubbles of PVA (Polyvinyl Alcohol, or Polyvinyl Alcohol), among other possible spheroidal materials, observed in the vaccine samples (see figure 9, lower tables), could be assimilated into carbon nanotubes to conform this type of moving objects. In fact, this is partially demonstrated in the work on PVA by (Yao, ZC; Yuan, Q.; Ahmad, Z.; Huang, J.; Li, JS; Chang, MW 2017) where it is indicated that *"In recent times, the diversification of fiber structure through ES (electrospinning process) has been demonstrated by engineering Janus, braid and core-shell structures. In addition to these structures, **beaded fibers** are also emerging as valuable architectures, although the uniformity of such materials is significantly different from their perfectly electrospun counterparts. Beaded fibers are commonly prepared (when using ES), by deploying solutions that possess low concentrations of polymer".* In other words, the fibers with PVA beads or what is the same, colloids, are an instrument for the supply and delivery of drugs in biomedical applications against cancer (Zhang, Y.; He, Z.; Yang, F.; Ye, C.; Xu, X.; Wang, S.; Zou, D. 2021) and even tissue regeneration in combination with the already known Chitosan (Grande-Tovar, CD; Castro, JI; Valencia, CH; Navia-Porras, DP ; Mina-Hernández, JH; Valencia, ME; Chaur, MN 2019). It is at this point where the second identification of the patterns observed in the c0r0n @ v | rus vaccines is found, in scientific literature, as can be seen in figure 10.

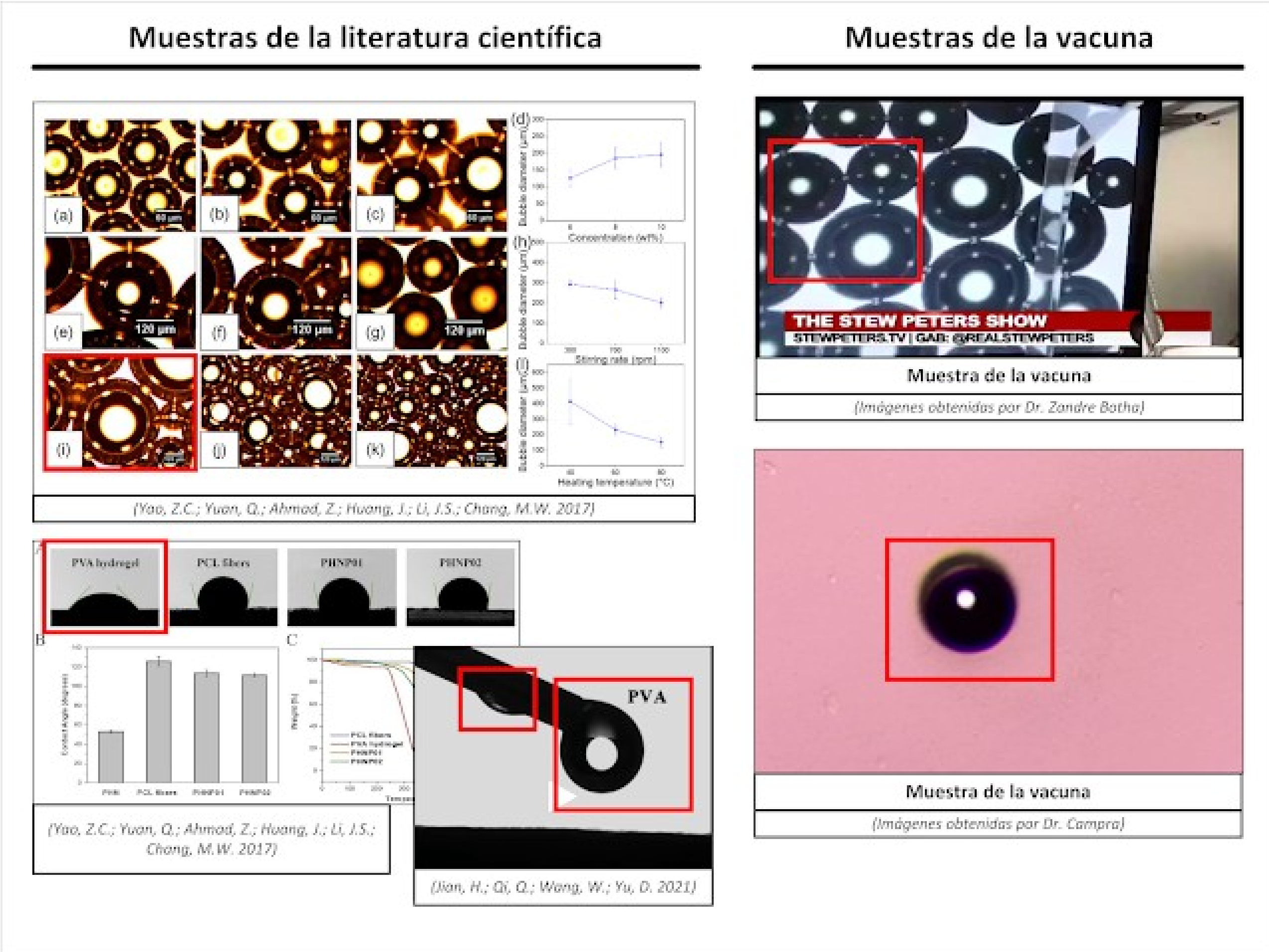


Fig. 10. Comparison of PVA (Polyvinyl Alcohol) observed in scientific literature and in vaccine samples. The profile of the PVA bubble in the form of a hydrogel and its angle of incidence are also appreciated, also compatible with the shape of the images analyzed. The upper right box corresponds to an image obtained by Dr. Zandre Botha in the program of (Peters, S. 2021). The lower right box corresponds to an image obtained by the doctor (Campra 2021)

Analyzing the properties of PVA (Polyvinyl Alcohol), its conductive capacity is discovered (Chaudhuri, B.; Mondal, B.; Ray, SK; Sarkar, SC 2016), as well as its function as an electrode when combined with other materials (Liu, S.; Zheng, Y.; Qiao, K.; Su, L.; Sanghera, A.; Song, W.; Sun, Y. 2015), specifically with multi-walled carbon nanotubes and by extension graphene, with which they are bathed or covered (Malikov, EY; Muradov, MB; Akperov, OH; Eyvazova, GM; Puskás, R.; Madarász, D.; Kónya, Z. 2014). All of this makes it possible to infer that PVA bubbles, even in the form of hydrogel, are susceptible to being controlled and directed by magnetic fields and electric currents, which further strengthens the possibility that PVA bubble beads can be configured and even formed. groups of bubbles due to the capillarity effect and magnetism, due to the Janus effect, whereby each bubble has an opposite pole that serves both to attract other bubbles and to move (Jian, H .; Qi, Q .; Wang, W .; Yu, D. 2021 | Wang, M .; Yu, DG; Li, X .; Williams, GR 2020).

Video 3. Formation of a PVA bubble. (Jian, H.; Qi, Q.; Wang, W.; Yu, D. 2021)

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