



Acoustic Sorting & Manipulation of Suspensions

Experience with the SME instrument



Nov. 2019

Who We Are

Aenitis develop innovative multipatented Medical Devices for **continuous, contactless and pressureless handling, sorting and washing of cells** in suspensions, using **Acoustic Radiation Forces** dedicated for **cell therapy manufacturing issues**.

Targeted Markets: ✓ cell therapy processing } **Blood Banks**
✓ labile blood products } **& Cell Therapy Units issues**

”Cell therapy can be defined as an approach that uses a biological product with therapeutic effect, derived from living cells. ”

Stem Cells, 2018



\$7.6 Billion

Total 2018 investment in cell therapy companies

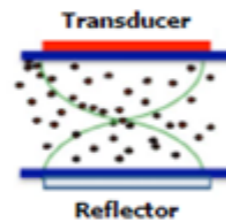
64%

Increase of 2017

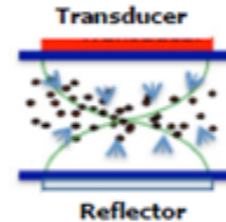
(Alliance for Regenerative Medicine)

Aenitis' Technological Answer

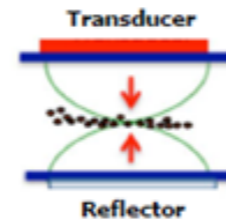
AENITIS TECHNOLOGIES' ACOUSTIC DOWNSTREAM CELL PROCESSING



The objects are suspended in the channel.



The acoustic forces lead the objects to the pressure node.



The objects are concentrated on a nodal plan. The concentration time is < 1 second.

$$F_{acoustic} = 4\pi r^3 \psi(\beta, \rho) k_0 E_0 \sin(2k_0 z)$$

Objects intrinsic properties

- size of the object
- acoustic properties of the object (density, compressibility)

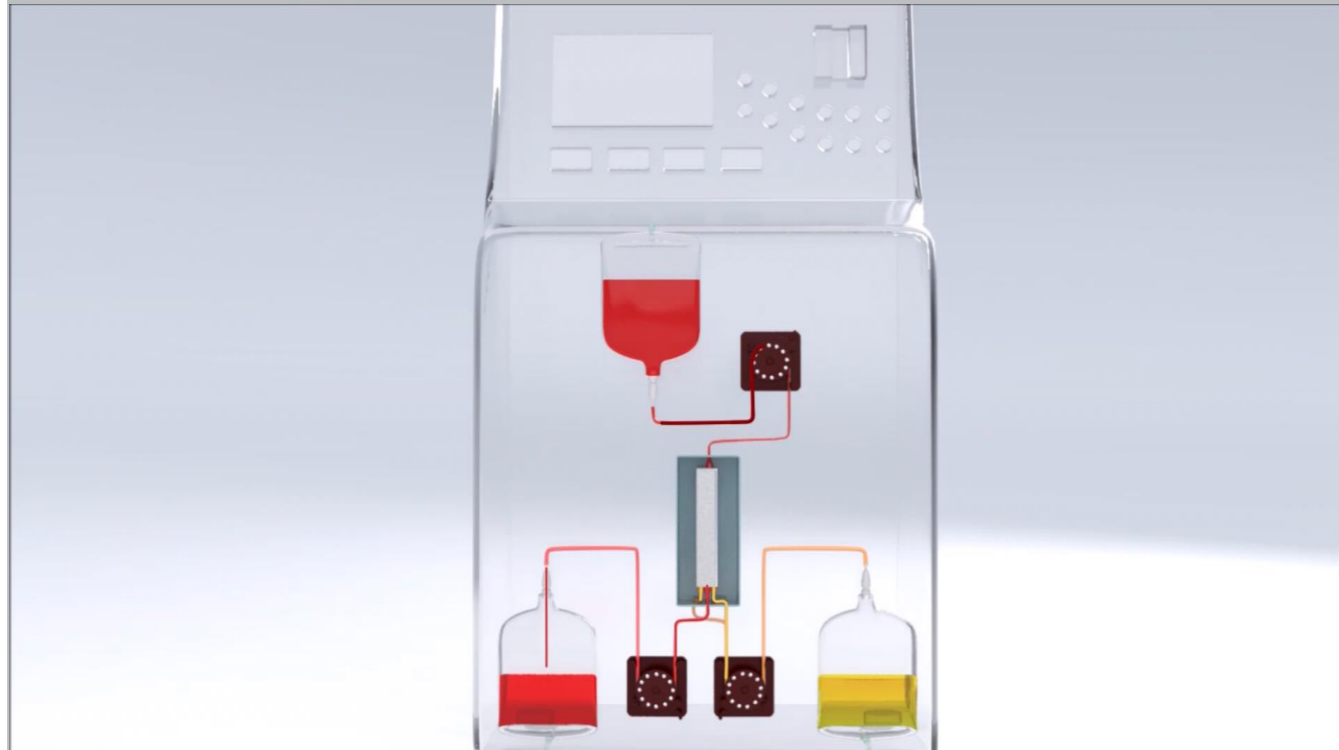
Experimental parameters

- frequency
- acoustic energy

For example: $F_{red\ cells} > 4 \cdot F_{platelets}$: Possibility of cell blood fractionation

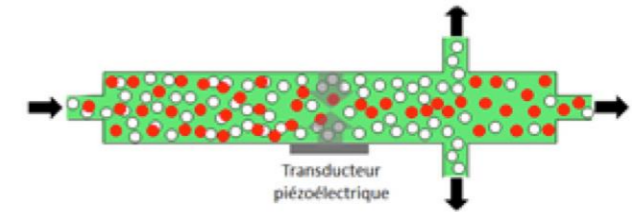
Aenitis' Technological Answer

AENITIS TECHNOLOGIES CELL ACOUSTIC SORTING

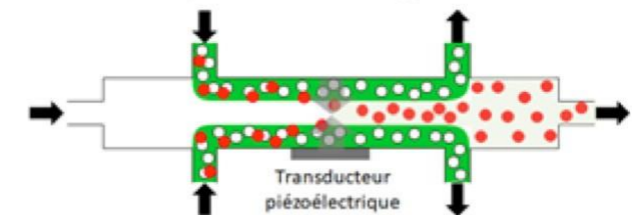


DIFFERENT CHANNEL DESIGNS AND USES

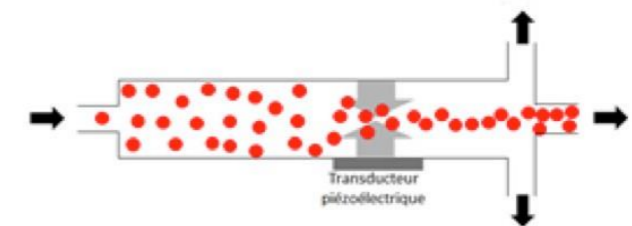
SORTING



WASHING / SORTING



CONCENTRATING / ISOLATING



SMEs Needs

- ✓ Non dilutive funding to reduce financial risks
- ✓ Networking for:
 - R&D opportunities
 - Market / Business understanding
 - HR
 - Funding opportunities
- ✓ Advisors / Mentors

European Commission support to these needs

- SME Instrument phase I – Tech and Business Feasibility
- SME Instrument phase II - Development

SME Instrument key points

...on the Acoustic Blood Cell Sorter experience

SME Inst Phase I

- €50k grant on Tech and Economical feasibilities studies
- Good 1st practice on filing and European Commission Extranet
- Link – interaction with EASME
- 3 days coaching / Mentoring (Strategy on Networking)

SME Inst Phase II

- More challenging application... (tried 3 times)
- €3,95M grant
 - ✓ Real huge support were private investors are not easy to convince
 - ✓ From lab to Industrialized product
 - ✓ Regulatory issues covered
 - ✓ IP issues covered
 - ✓ Monitoring and Communication support
- Networking events
- 12 days Coaching / Monitoring (Strategy – Networking – Market understanding – HR)
- Openness to other EU SME Supports programs : Fortissimo, EIT Health, Access to Europe

Advices

✓ **Try as it is always a good practice and reusable application file**

- Revers psychology: be a EU Leader
- Business Plan based
- Pugnacity
- Call your network

✓ **Opportunities openness!** To get opportunities you must get out your routine zone

...luck is a critical part of your success...

... and luck or opportunities, it takes planning!

✓ **Europe is a great opportunities for innovative SMEs due to richness of its network**

- KOL
- Large corporate
- Key academia
- Funding opportunities
- Market

✓ **Working with consultants but do your own application with them and not the opposite!**

- Check resume and conditions!
- Following rules for application and for periodic reports... it's not so complex. Local H2020 supports such as EEN offices



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