

HEMO2life : du brevet à l'essai clinique



Dr. Franck ZAL
CEO HEMARINA

100

Millions

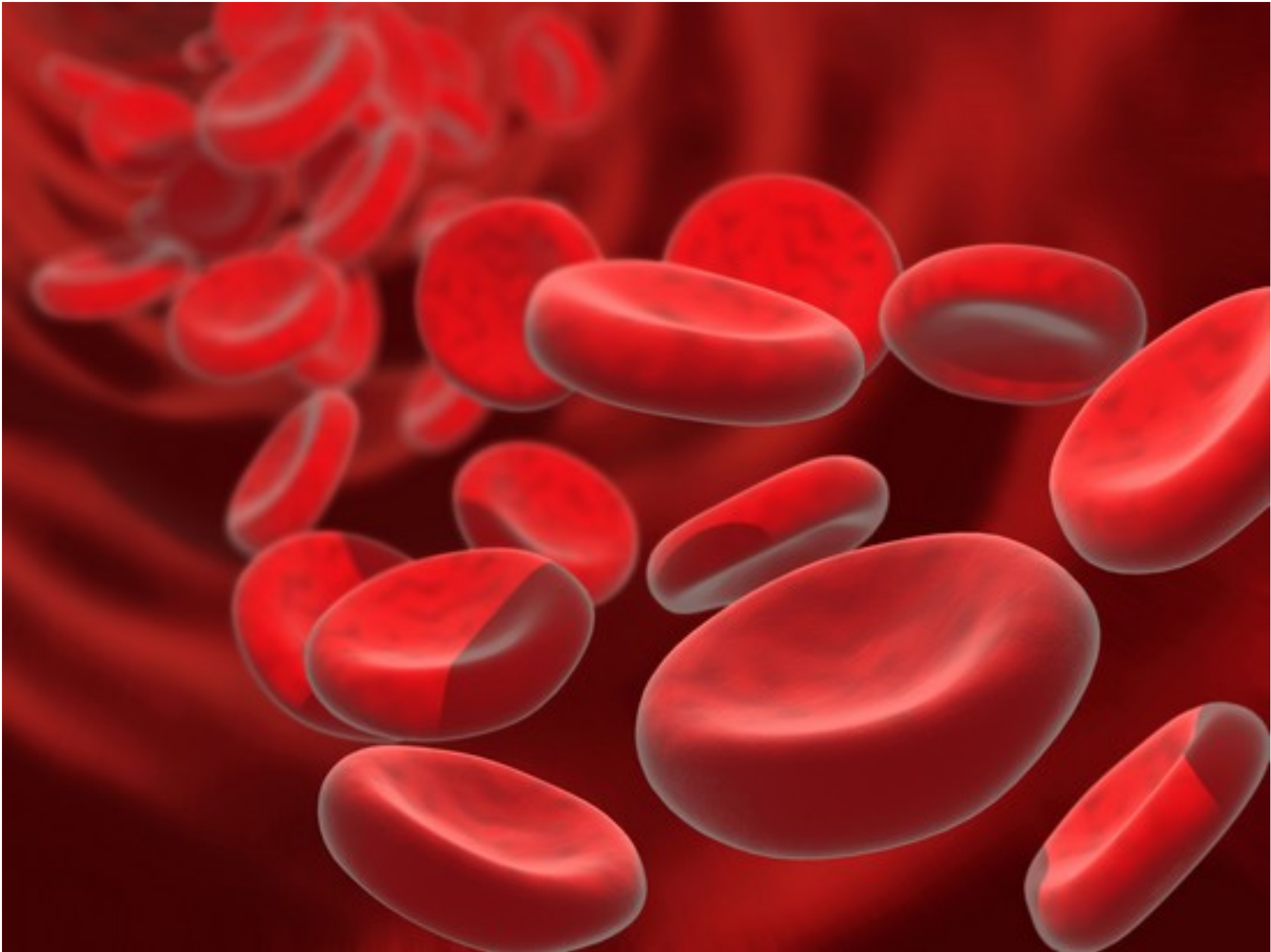












A

+

AB

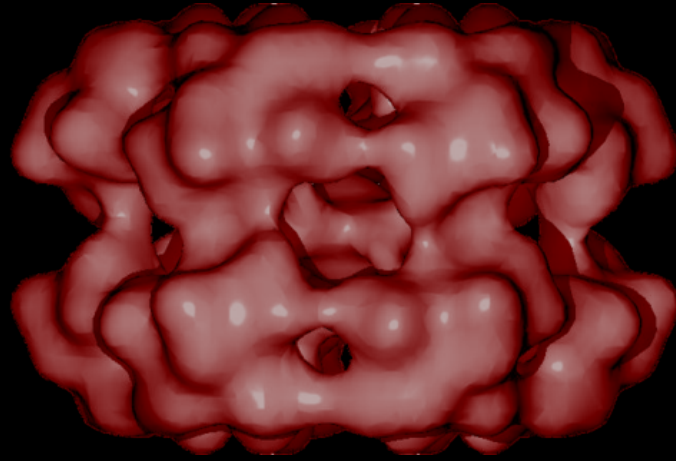
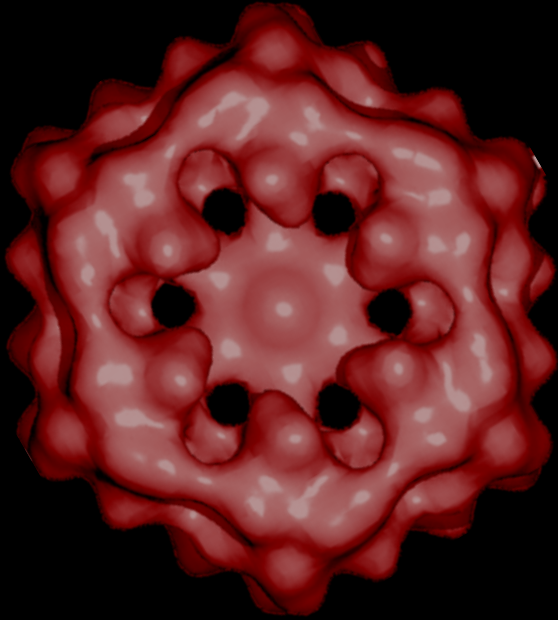
O

-

B





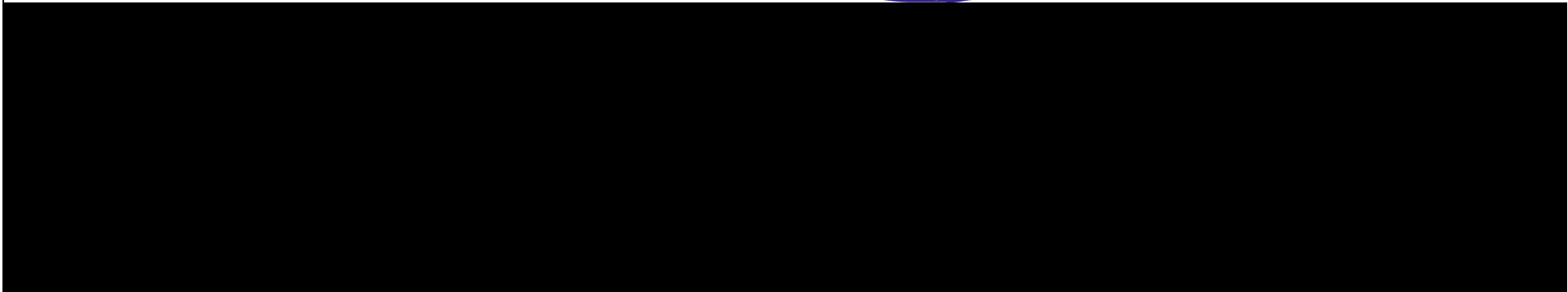






HEMARINA

Committed to saving lives





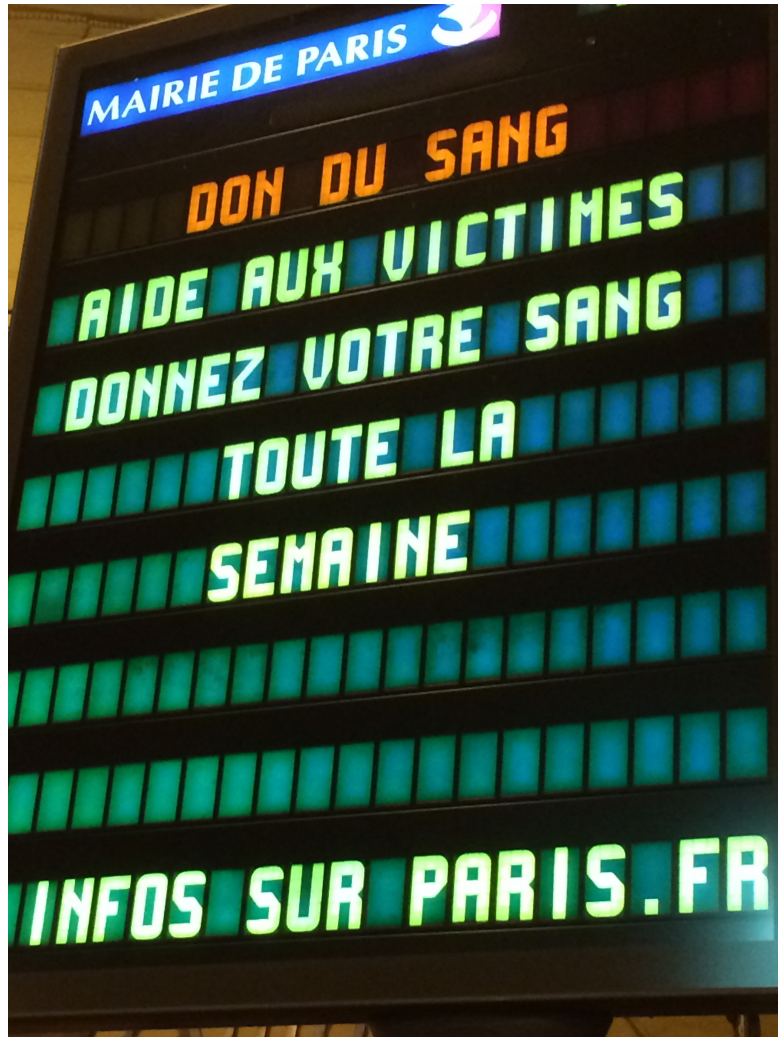
- ❑ It is estimated that **1.2 million persons** died of traffic crashes each year worldwide. That means near **3300 persons died** every day
- ❑ Injured persons are estimated as high as **30-50 million**
- ❑ Injured or/and death related to traffic crash may increase of **65% in next 20 years**





- ❑ In 2009 International Peace Center reported that there were **624 terrorist attacks** from 1993 through 2009 worldwide, which resulted in **26 073 died and over thousand injuries**
- ❑ In September 11, 2001 « 911 » terrorist attack happened in New York and Washington lead to **2982 persons died**. This is the biggest terrorist attack in human history.
- ❑ ..Moskow, London, Boston, Toulouse, Paris, Bruxelle, Nice...

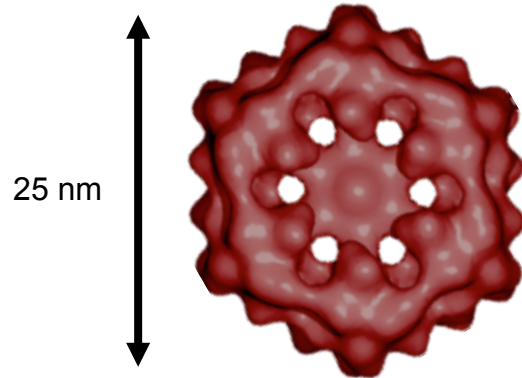




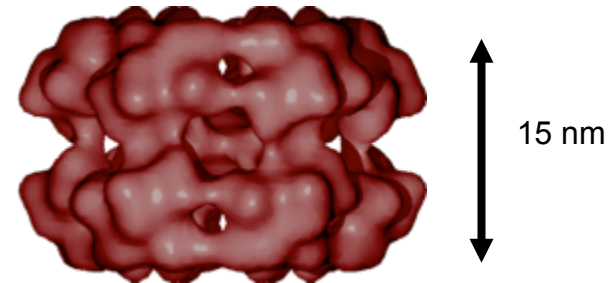
The blood shortage worldwide is estimated to be around 100 million liters per year



Face view



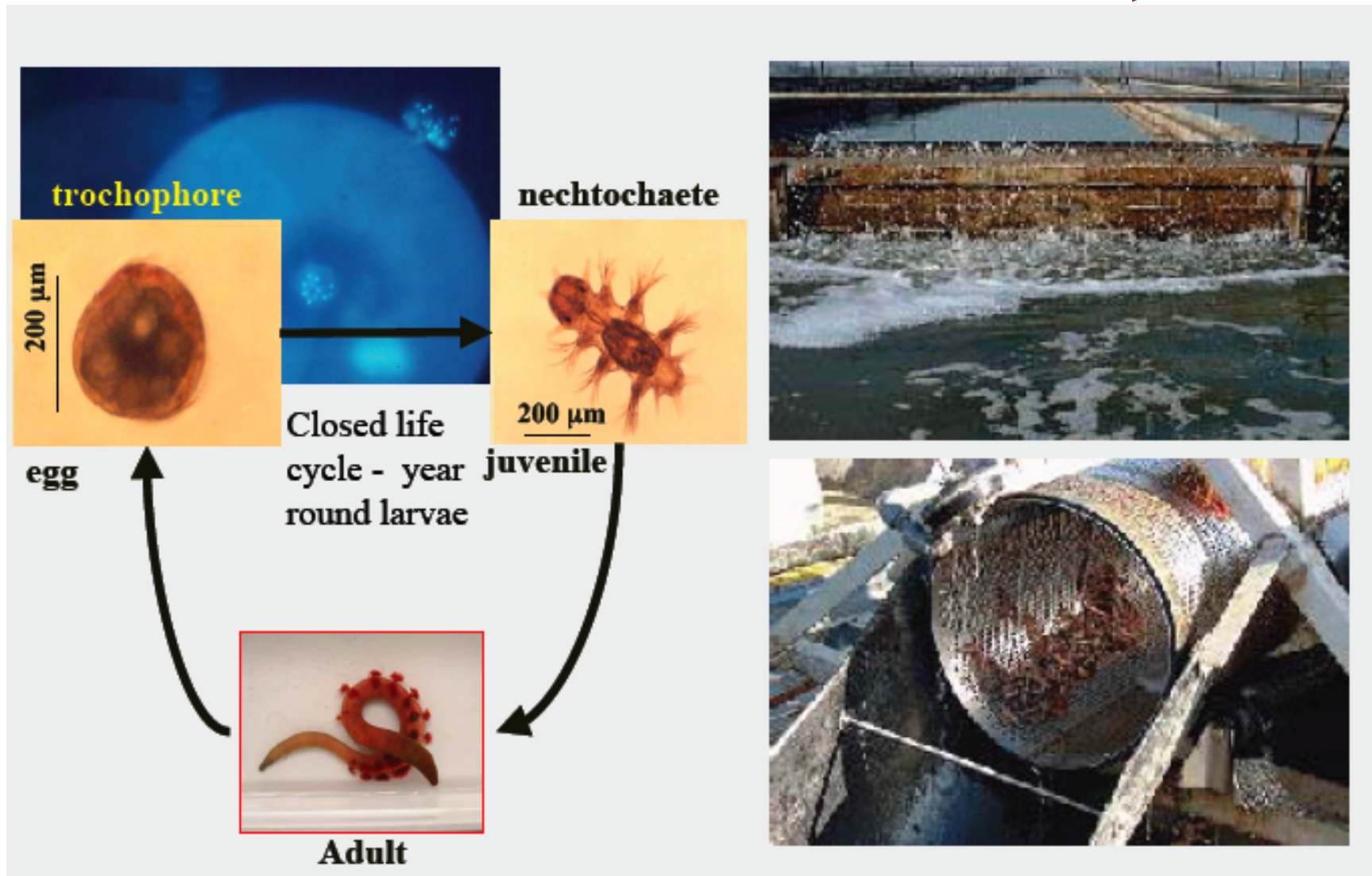
Profil view



➡ Main characteristics

- Biopolymer of 3.6 MDa
- composed of 156 globin chains and 42 linker chains
- anti-oxydative properties (SOD activity)
- loading and unloading oxygen in PO₂ gradient

Arenicola marina : Production



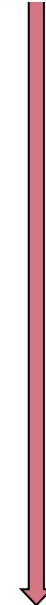
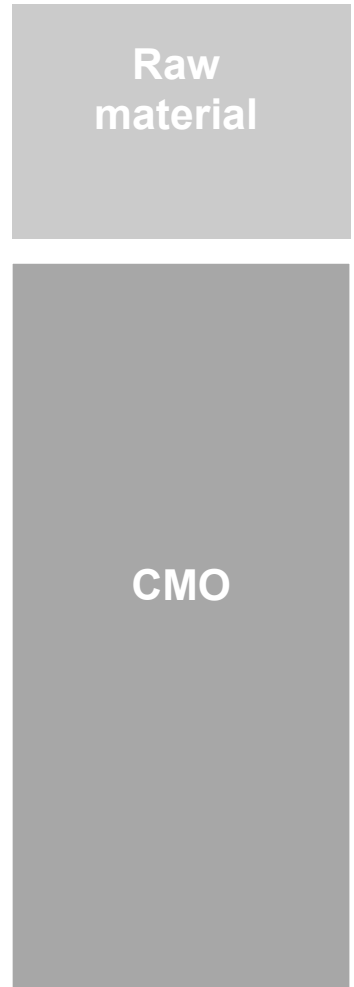


« We are committed to save lives »

Arenicola marina : Production



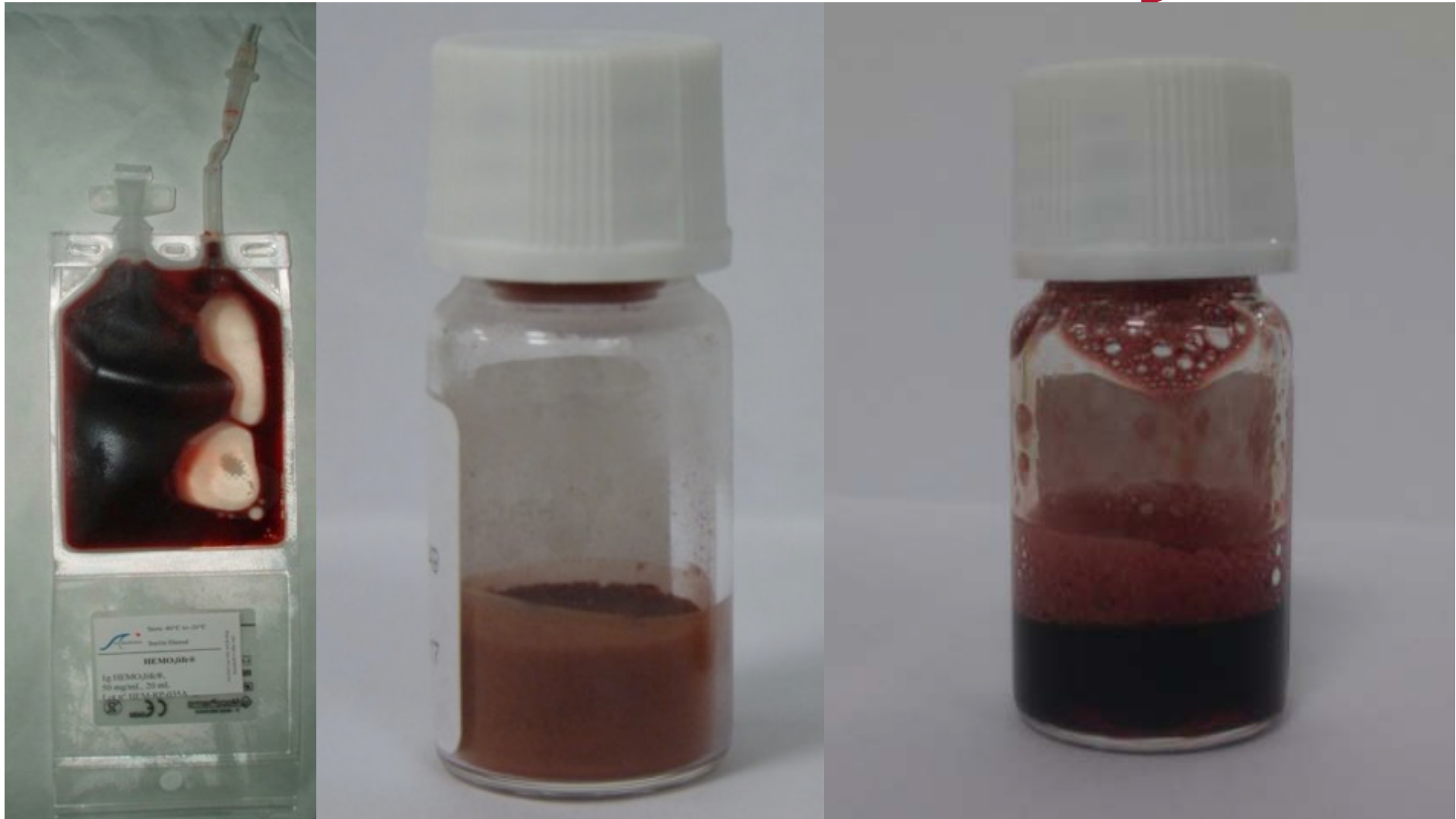
Molecules : Industrial production



GMP production



End product



Molecules : Industrial production





HEMO₂life[®]

STERILE A



**Additif aux solutions de préservation hypothermique des greffons rénaux
Supplémentation à la dose de 1 g par litre de solution de préservation**

Ce produit ne peut en aucun cas être administré directement à l'homme pour un usage thérapeutique. Dispositif de transfert associé.

USAGE UNIQUE - NE PAS RECONGELER

MANIPULER AVEC PRÉCAUTION

Ne pas utiliser après la date de péremption. A conserver au maximum 12h à 5 +/- 3°C après décongélation.

NE PAS CHAUFFER, Eliminer tout produit endommagé. Voir la notice avant utilisation.

PRODUIT DESTINÉ A UNE INVESTIGATION CLINIQUE EN SUPPLÉMENTATION DE LA SOLUTION DE PRÉSERVATION BELZER UW[®]



Fabricant: HEMARINA SA
Aéropôle centre
29600 MORLAIX

FAB: 12/2014

LOT: S208/ORGAN/FC002

EXPIRATION: |3|1| / |1|2| / |2|0|1|6|

Link between applications : Oxygen



Cell

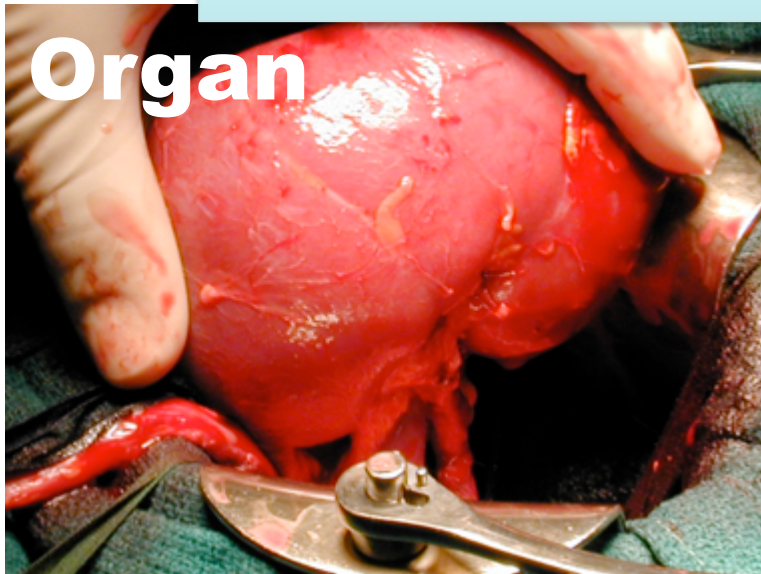


Tissue



How to deliver oxygen at all level of life organization using HEMARINA's molecules ?

Organ



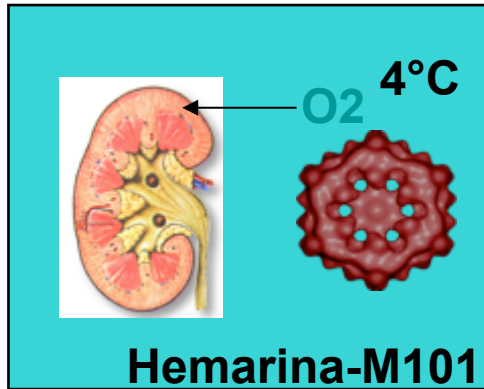
Organism





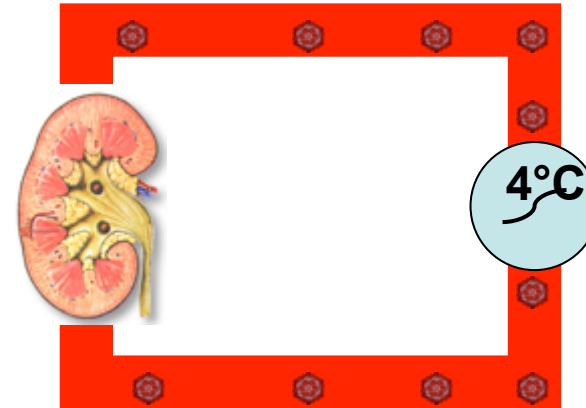
Organ & Tissue preservation



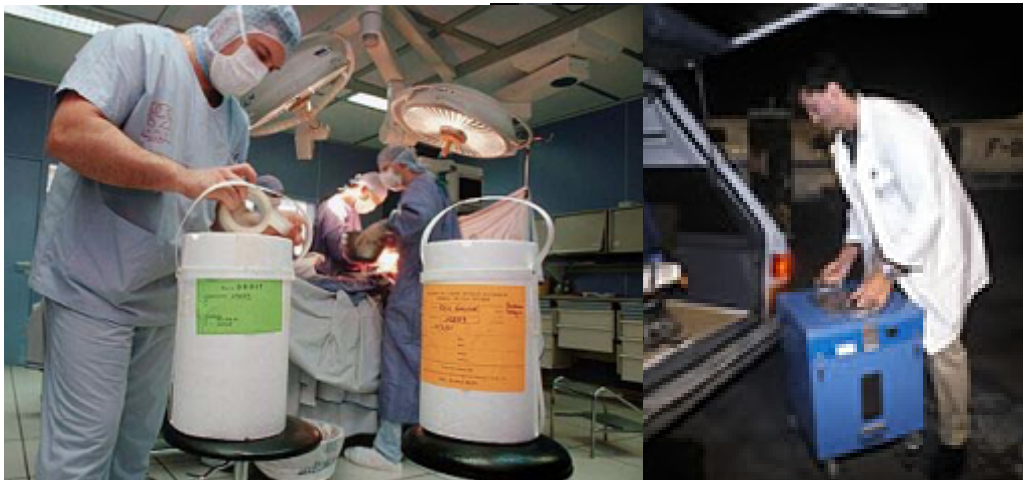


Hemarina-M101

Static Mode



Pulsatile Mode



Heart-Beating Donor (HBD)



Non-Heart-Beating Donor (NHBD)



⇒ **Modèle** : Auto-transplantation rénale chez le porc Large White.

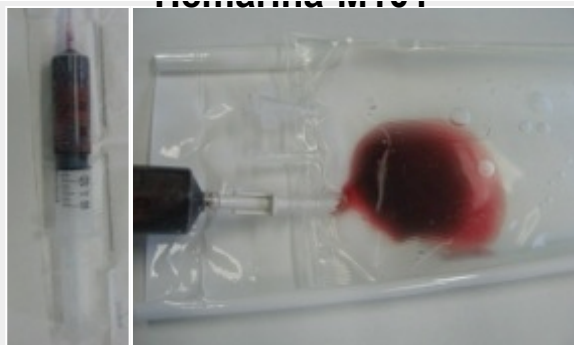
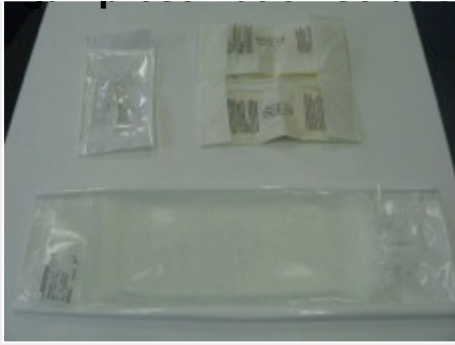
- Modèle établi et validé au niveau de la plate-forme IBiSA de Surgères (U927, Unité Expérimentale GEPA ‘Génétique et Expérimentation en Productions Animales’, INRA ‘Domaine du Magneraud’, Surgères)

⇒ **Animaux** :

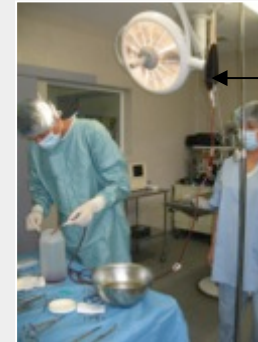
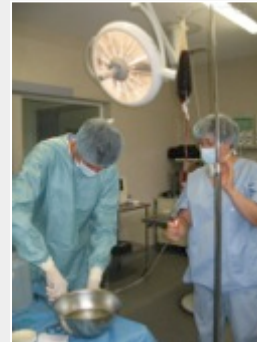
- Souche Large White.
- Mâle
- 35-40 kg.
- Elevage interne à l’ INRA.
- Conditions d’ hébergement selon les recommandations de l’ INRA et du Ministère de l’ Agriculture.



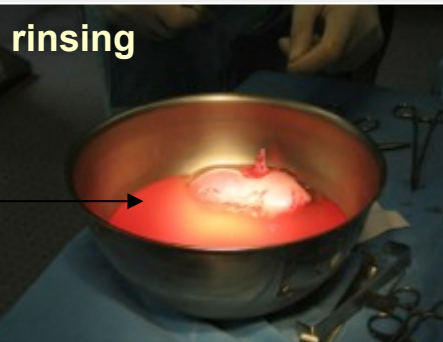
(Doucet et al., AJP, 2008 ; Hauet et al., Kidney Int, 2002).



Kidney extraction Rinsing solution preparation

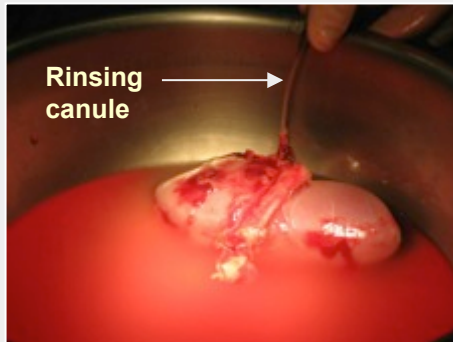


Final solution

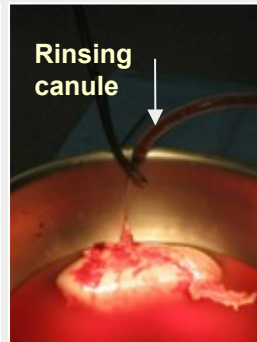


rinsing

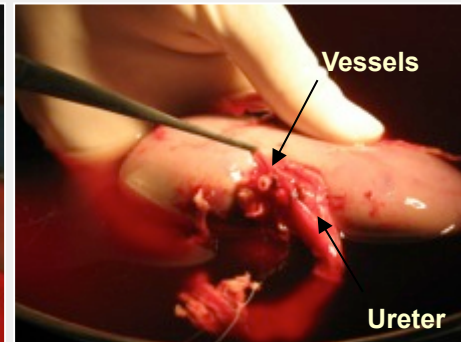
Physiological solution



Rinsing canule



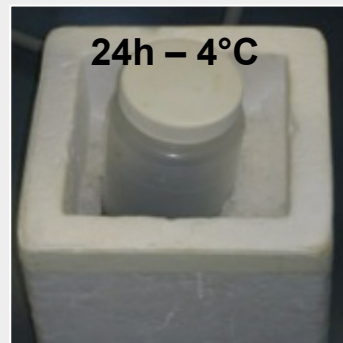
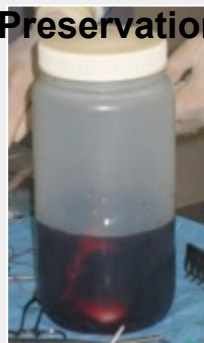
Rinsing canule



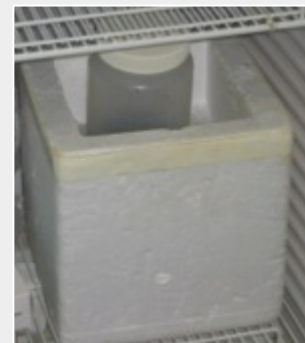
Vessels

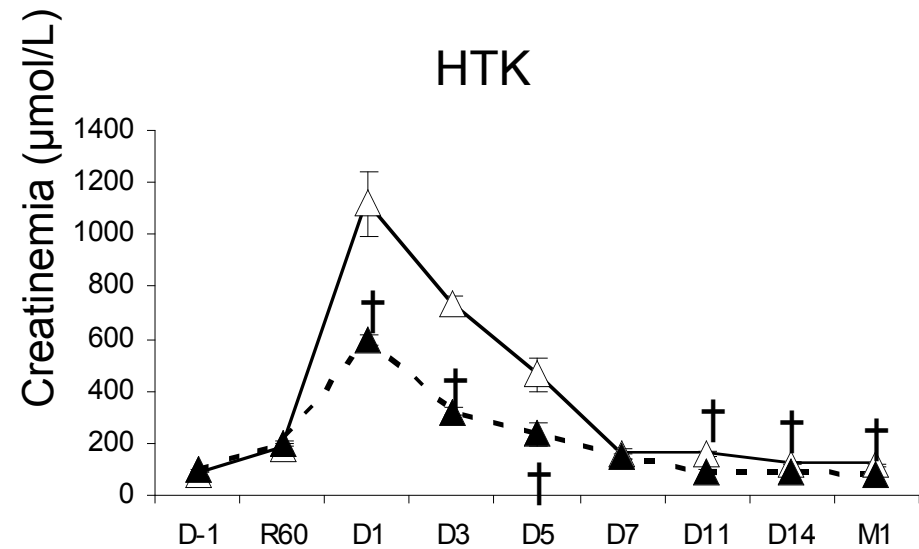
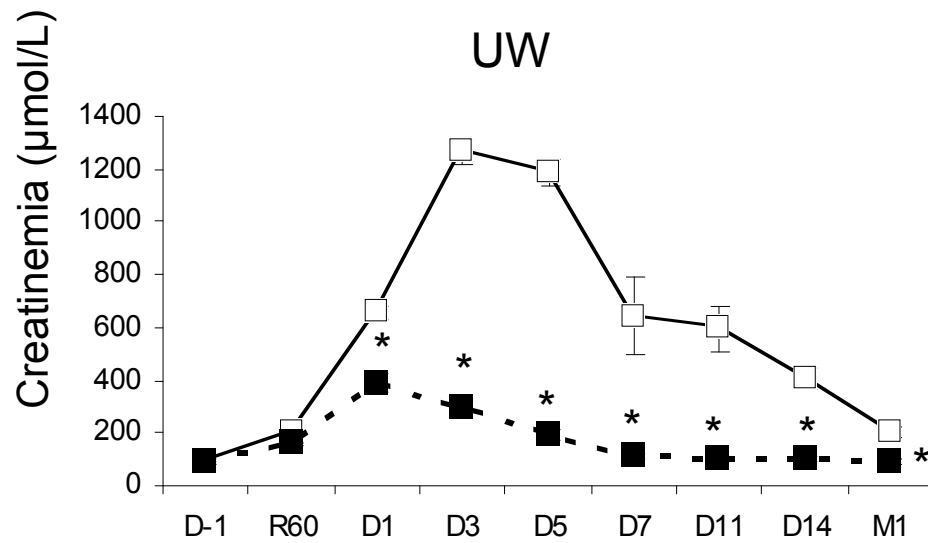
Ureter

Preservation



24h - 4°C





UW

 UW+HEMO2life

 HTK

 HTK+HEMO2life

*: p < 0.05 to UW

†: p < 0.05 to HTK

(Thuiller et al., AJT 2011)