Our Work

Our process from animal acquisition to germplasm collection

Goals & Process
With a goal of 200 embryos and 3,000 straws of semen per breed, SVF hopes to be able to reawaken a breed with its full genetic diversity within one generation.
Our process starts with the challenge of locating 30 females and 8 – 10 males of each breed. Breeds are typically selected using the ALBC's Conservation Priority List (PDF).

SVF staff is continually interacting with breeders, zoos and other conservation organizations to identify which animals should be a part of the program. We encourage breeders to contact us through the Breeder Page of our website or by phone. The importance of SVF's library lies not only in the cryo-repository but in the stored data of history and pedigrees filed in our database. This is one of the reasons SVF feels they are leaders in cryo-preservation of heritage breeds.

Over the years our success has been greatly enhanced by the numerous breeders who have been proactive in assisting us, whether through Breeder Animal Donations or the invaluable information regarding bloodlines and pedigree of the various breeds. They are the cornerstones of SVF Foundation, allowing our non profit organization to fulfill its mission by dedicating their time, effort and in many cases animals. In the past 2 years alone SVF has been offered over 160 animals, all by individuals who wanted to help conserve genetics.

Pat and Rick Hopkins of Anza, CA are a great example of how individual breeders help SVF achieve its mission. The Santa Cruz sheep were being eradicated from their sole native habitat, Santa Cruz Island off the coast of CA. Pat and Rich stepped in to help preserve the breed and took a flock onto their farm. When they decided to downsize, they contacted SVF and donated not only the flock of twenty eight sheep, but also a large collection of breed information gathered over the years. This information has been added to the SVF database and will be invaluable to the future of the Santa Cruz germplasm.

Animal Health Testing

Long before new animals arrive, SVF staff work closely and in conjunction with veterinarians from Cummings School of Veterinary Medicine at Tufts University to follow strict Health Testing protocols. This ensures the health of both incoming animals and those already on site. One of the primary concerns is also protecting the "frozen library" of germplasm by preventing disease from being preserved. One of the reasons SVF's library is so important is the known history and documentation of health testing for every animal in the tank.
View More Photos

Animal procurement poses great challenges; SVF works with both independent transporters and its own staff and equipment to acquire animals throughout the United States. Animals are transported to SVF Foundation, a 46 acre site comprised of 15 buildings in Newport, Rhode Island. All animals are immediately placed into a standard 30 day quarantine. This practice ensures the health of both newly acquired and already present animals at SVF.

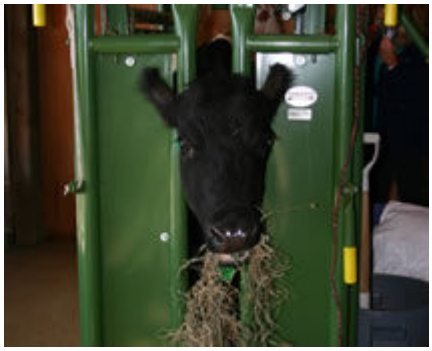
The livestock department works closely with veterinarians from Tufts to maintain an exceptionally high standard of animal care. Our herd health program was developed and is continually restructured in order to respond to the challenges of agriculture today. SVF maintains a strict biosecurity policy and is closed to the public.

Small Ruminant Embryo Collection

SVF's small ruminant embryo collection is performed within the typical breeding season of September to March. Sheep and goats are bred naturally, whereas cows are artificially inseminated. Once or twice a week the ewes and does are brought to our animal clinic for embryo collection. Once a week 3 – 4 selected females are brought to our animal clinic for embryo collection. These donors are reproductively synchronized with typical breeding protocols to increase success.

SVF's operating room is typical to veterinarian clinics. Prior to surgery a standard physical exam is completed on each female. SVF allows fourth year veterinary students from Tufts the rare opportunity to view and assist in the surgical procedure. Operating veterinarians perform a laparoscopic examprior to making an incision to assess the response to synchronization and prevent any unnecessary procedures.
View Movie Clip of Laparoscope
Using standard protocols the uterus is flushed with media to collect embryos. Each animal is monitored carefully during recovery and for several days after the operation.

Bovine Embryo Collection.



Bovine embryo collection similarly begins with synchronization of the cow's reproductive cycle. This is done to accurately time artificial insemination and results in a greater potential yield of embryos. Unlike embryo collection in small ruminants, bovine collection is handled in our Longbarn with the cow in a squeeze chute. The veterinarian gives an epidural and flushes embryos from the uterus using standard procedures.

In our lab the embryology staff sorts, grades, and catalogues each embryo based on microscopic examination. The embryos are then equilibrated with a cryoprotectant solution, loaded into labeled straws, subjected to a controlled rate freezing process, and transferred to a liquid nitrogen storage tank.

Small Ruminant Semen Collection

Small ruminant semen collection is handled on site (for practicality bulls are collected off site). Bucks and rams are carefully selected to represent a varied genetic range within each breed. Semen collection season runs from September to March following the natural breeding patterns of each species. In order to attain the goal of 3,000 straws per breed, approximately 300 straws are collected from each individual.

Bovine Semen Collection

Bovine semen is either purchased outright or custom collected by contracted semen collectors. Regardless of the origin, SVF requires all bulls to pass standard health tests. Once a bull is selected for custom collection it is either sent to a bull stud or SVF designates a mobile semen collector to obtain the semen.

Cryopreservtion of Germplasm and Animal Data

Cryopreservation of germplasm extends to blood and tissue collection. Every animal that passes health testing is represented in SVF's cryo freezers by a sample of blood (in the form of serum) and tissue (in the form of a cell culture). SVF staff collects and processes the majority of these samples on site. In the case of off-site semen collection, an attending veterinarian often oversees this procedure.

Every bit as important to the library is the data about each animal. In order to ensure the most efficient usage of germplasm in the future SVF maintains two extensive databases. An animal database maintains information on each individual animal - including pedigree, registration and health history information. SVF utilizes Freezerworks to store key location and information about each cryo-preserved sample. All of SVF's databases are backed up off site.

One of the most important aspects of SVF's library is quality assurance. Once the embryo goal is met for each breed an embryo is thawed and transferred into a surrogate mother. SVF's first embryo transfer involved a Tennessee Myotonic embryo implanted into a Nubian doe which resulted in the birth of "Chip".

Animal Placement

SVF endeavors to place animals into active conservation programs whenever possible. We work with individual breeders and large conservation organizations such as zoos to promote breeding and education programs
"Thank you for your help with getting this goat to Virginia. I know you really went above and beyond the call of duty to help me get my little breeding program started, and I really appreciate everything you've done." – Leslie Edmundson, The Plains, NY

In our efforts to support "conservation on the hoof" SVF asks breeders to stay in contact once animals are placed. As of 2005, approx 74% of females bred actually conceived - this fertility rate is within the normal limits for livestock. Continued reproductive success is an important aspect of our mission.

Mission To The Future

The germplasm collected by SVF Foundation is expected to be viable on a long term basis. Once in the tank, the germplasm is not typically released. If, at some point, a situation arises where samples from the collection are needed, a panel of SVF Foundation Trustee's and Scientific Advisors will determine how it may be distributed