The Great Dane Club of America, Inc.
What are blood types and why are they important?

What systems are used to classify blood types?

When is blood transfusion needed?

What dogs make good donors?

Why should I know my dog’s blood type?
CANINE BLOOD TYPES

Red cells (erythrocytes) in the blood have features which:

- Are unique to dogs
- Can stimulate the immune system to produce antibodies which may be harmful
- Are critical for safe transfusion therapy and blood donation
**CANINE BLOOD TYPES**

- **Dog Erythrocyte Antigens** (DEA’s) are a group of specific proteins on the surface of red blood cells.

- Each DEA is either present or absent, depending on genetic factors.

- Every dog possesses a DEA “profile” which is permanent and can be determined via simple tests.
CANINE BLOOD TYPES

- When blood products are given, the recipient may react to incompatible DEA’s by producing antibodies which destroy blood cells (hemolysis).

- Knowing which DEA’s are present in the blood of donors and recipients enables safe transfusion.
Blood groups are designated in a format:

DEA X.X

- The first number indicates the genetic locus for a specific RBC surface protein
- The number after the decimal (if any) indicates a particular allele at that locus

(e.g., DEA 1.1 and DEA 1.2 are different alleles at gene locus 1)
6 major blood groups are defined, based on standardized surface antigen tests:

- DEA 1.1
- DEA 1.2
- DEA 3
- DEA 4
- DEA 5
- DEA 7

Other blood groups exist, but these 6 are important in the context of transfusion.
If a dog is **positive** for a specific DEA:
- Antigen of that blood group is **present** on the red cell surface

If a dog is **negative** for a specific DEA:
- Antigen of that blood group is **not present** on the red cell surface
Dogs have no naturally occurring antibodies to DEA 1.1 or DEA 1.2

- If blood positive for DEA 1.1 is transfused into a DEA 1.1 negative dog, the initial transfusion is tolerated, but the dog begins to produce antibodies against DEA 1.1
- Second/subsequent transfusions with DEA 1.1 or DEA 1.2 positive blood may result in life-threatening hemolytic reactions
# CANINE BLOOD TYPES: All Breeds

<table>
<thead>
<tr>
<th>DEA Group</th>
<th>Avg. % Positive</th>
<th>Avg. % Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA 1.1</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>DEA 1.2</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>DEA 3</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>DEA 4</td>
<td>98%</td>
<td>2%</td>
</tr>
<tr>
<td>DEA 5</td>
<td>23%</td>
<td>77%</td>
</tr>
<tr>
<td>DEA 7</td>
<td>45%</td>
<td>55%</td>
</tr>
</tbody>
</table>
CANINE BLOOD TYPES

- Information for Blood Recipients
Rapid in-house blood typing uses “card” test which tests DEA 1.1 only

- DEA 1.1 negative dogs can either negative or positive for 1.2 and 1.3
- DEA 1.1 positive dogs: always negative for 1.2 and 1.3

<table>
<thead>
<tr>
<th>DEA 1.1 Result:</th>
<th>It will type DEA 1.2</th>
<th>It will type DEA 1.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>Negative or Positive</td>
<td>Negative or Positive</td>
</tr>
<tr>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>
In cases where the blood type can’t be determined, universal blood should be given.

- Dogs positive for DEA 1.1 should receive positive or universally negative blood.

- Dogs negative for DEA 1.1 should **only** receive negative blood.
CANINE BLOOD TYPES

- Information for Blood Donors
What is a Universal Donor?

- Must be Negative for DEA 1.1, DEA 1.2 & DEA 3, 5 and 7 and Positive for DEA 4
- Certain breeds (e.g., Greyhounds) have a higher percentage of universal donors
OPTIMAL CANINE DONORS

- **Universal Donor** in good general health
- Suitable disposition
- Between 1 and 8 years of age
- Weight > 50 pounds
- Male or spayed nulliparous female*
- No history of previous blood transfusions*

*Eliminates donors possibly exposed to foreign blood groups and who may have developed antibodies that interfere with compatibility testing

- Normal coagulation factors (e.g., von Willebrand, etc.)
- Current on vaccines and on heartworm preventative
DONOR DOGS TO THE RESCUE
HEMI: ANGEL’S HERO
SUPPLEMENTAL MATERIAL

- GDCA Surgical Guidelines
- Hemopet Guide to Blood Products
- Canine Hematology Tests/Normal Values
- Canine Serum Chemistry Tests/Normal Values
Good Bye!