

(12) **United States Plant Patent**
Lewers et al.

(10) **Patent No.:** **US PP33,636 P2**
(45) **Date of Patent:** **Nov. 16, 2021**

(54) **STRAWBERRY PLANT NAMED ‘CORDIAL’**

(50) Latin Name: *Fragaria x ananassa* Duchesne ex Rozier
Varietal Denomination: **Cordial**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/939,591**

(22) Filed: **Jul. 27, 2020**

(51) **Int. Cl.**
A01H 5/08 (2018.01)
A01H 6/74 (2018.01)

(52) **U.S. Cl.**
USPC **Plt./208**

(58) **Field of Classification Search**
USPC Plt./208, 209
CPC ... A01H 5/08; A01H 5/02; A01H 6/74; A01H 6/7409
See application file for complete search history.

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(57) **ABSTRACT**

This invention relates to a new and distinct cultivar of strawberry named ‘Cordial’. The new late-season cultivar is primarily characterized by the uniformity and symmetry of fruit shape and size, evenness of color, glossiness of fruit skin, freshness and health of calyx, being free of physiologically-based blemishes such as sun scald, bronzing, and rain damage and shelf life of the fruit.

7 Drawing Sheets

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Latin name of the genus and species of the plant claimed: ‘Cordial’ is a new strawberry plant that is *Fragaria x ananassa* Duchesne ex Rozier.

Variety denomination: The new strawberry plant claimed is of the variety denominated ‘Cordial’ *Fragaria x ananassa* Duchesne ex Rozier.

BACKGROUND OF THE NEW PLANT

The present invention relates to a new and distinct strawberry cultivar designated ‘Cordial’ and botanically known as *Fragaria x ananassa* Duchesne ex Rozier. This new strawberry cultivar was discovered in Beltsville, Md., in Spring 2013 and originated from a cross between the female parent B1893 (unpatented) and the male parent B1805 (unpatented). The original seedling of the new cultivar was asexually propagated in Beltsville since 2013 by rooting daughter plants from stolons of the mother plant. The present invention has been found to be stable and reproduce true to type through successive asexual propagations rooting daughter plants from stolons.

BRIEF SUMMARY OF THE NEW PLANT

The cultivar ‘Cordial’ has not been observed under all possible environmental conditions. The phenotype may vary somewhat with variations in environment such as temperature, day length, and light intensity, without, however, any variance in genotype.

The following traits have been repeatedly observed and are determined to be the unique characteristics of ‘Cordial’. These characteristics in combination distinguish ‘Cordial’ as a new and distinct *Fragaria* cultivar:

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1. Late season.
2. Resistant to anthracnose fruit rot (*Colletotrichum acutatum*).
3. Excellent fruit quality in storage (shelf life).
4. High yield.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

This new strawberry plant is illustrated by the accompanying photographs that show the flowers, fruit and entire plants; the colors shown are as true as can be reasonably obtained by conventional photographic procedures.

FIG. 1 shows ‘Cordial’ plant size is smaller than that of ‘Ovation’ and ‘Allstar’ while flowering, with 30.5 cm spacing, in annual plasticulture.

FIG. 2 shows some ‘Cordial’ terminal flowers are above the canopy, but some are below.

FIG. 3 shows a single ‘Cordial’ flowering truss.

FIG. 4 shows ‘Cordial’ stigma color is more yellow-orange than that of ‘Ovation’ and ‘Allstar’.

FIG. 5 shows typical ‘Cordial’ fruit at various ripening stages.

FIG. 6 shows two containers of ‘Cordial’ fruit photographed two years apart in different outdoor lighting conditions. In one container of fruit on opaque background.

FIG. 7 shows typical halved fruits of ‘Cordial’ (left), ‘Allstar’ (center), and ‘Ovation’ (right), with ‘Cordial’ flesh having more uniform coloring.

DETAILED DESCRIPTION OF THE NEW CULTIVAR

The following description of ‘Cordial’ is based on observations taken from 2015 through 2018 growing seasons in evaluations in Beltsville, Md. This description is in accor-

dance with UPOV terminology. Color designations, color descriptions, and other phenotypical descriptions may deviate from the stated values and descriptions, depending on variation in environmental, seasonal, climatic, and cultural conditions. ‘Cordial’ has not been observed under all possible environmental conditions. The botanical description of ‘Cordial’ was taken from plants nine months after establishment in the field. Color terminology follows The Royal Horticultural Society Colour Chart, London (1986).

‘Cordial’ fruit are suitable for shipping and fresh-market use, based on a combination of the marketability ratings after refrigerated storage, fruit firmness, and fruit skin toughness. The percent of fruit still at marketable quality (no rot and very little degradation) after refrigerated storage was 86% (1 week) and 52% (2 weeks) for ‘Cordial’, compared with 37% and 10% for ‘Allstar’, and 52% and 15% for ‘Ovation’.

DETAILED BOTANICAL DESCRIPTION

Table 1 shows selected characteristics of the new cultivar compared with plant characteristics of ‘Allstar’ and ‘Ovation’. Characteristics include inflorescence position, stigma color, anther number, harvest maturity, weight of fruit, yield, firmness of flesh, and evenness of flesh color.

TABLE 1

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Inflorescence position	Slightly below to above canopy	Slightly below canopy	At or slightly below canopy
Stigma color	Yellow-Orange Group 22A	Yellow-Orange Group 22B	Yellow-Orange Group 20B
Anther number	33.2	24.6	22.2
Harvest maturity (50% of plant with ripe fruit)	Early June	Late May	Early June
Weight of fruit (g)	18.5	10.0	13.9
Yield (kg/plant)	0.79	0.61	0.54
Firmness of flesh	Firm	Medium to firm	Medium to firm
Evenness of flesh color	Somewhat even	Not even	Uneven

Table 2 shows plant characteristics of the new cultivar compared with plant characteristics of ‘Allstar’ and ‘Ovation’. Plant characteristics include plant height, diameter, number of crowns per plant, habit, density of individual plants and vigor.

TABLE 2

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Plant height (cm)	27.2	31.4	28
Plant diameter (cm)	41.3	47.5	49.2
Number of crowns plant	3.8, 3 to 4	4.7, 3 to 6	4.7, 3 to 7
Habit	Upright open globose	Upright open globose	Upright open globose
Density of individual plant	Medium	Medium	Medium
Vigor	Medium to strong	Medium	Strong

Table 3 shows leaf characteristics of the new cultivar compared with leaf characteristics of ‘Allstar’ and ‘Ovation’. Leaf characteristics include leaf type, leaf shape, leaf

length, leaf width, terminal leaflet length, terminal leaflet width, terminal leaflet length to width ratio, leaf margins, shape of teeth, leaf serrations per leaflet, upper and lower leaf surface color, number of leaflets, terminal leaflet apex shape, terminal leaflet base shape, glossiness upper side leaf surface, texture upper side leaf surface, texture underside leaf surface and leaf arrangement.

TABLE 3

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Leaf type	Semi-evergreen	Semi-evergreen	Semi-evergreen
Leaf shape	Trifoliolate with ovate leaflets touching to overlapping	Trifoliolate with ovate leaflets touching to overlapping	Trifoliolate with ovate leaflets touching to overlapping
Leaf length (cm)	12.3	13.6	13.6
Leaf width (cm)	22.0	16.9	16.7
Terminal leaflet length (cm)	10.8	9.4	9.3
Terminal leaflet width (cm)	9.4	8.2	7.8
Terminal leaflet length/width ratio	1.2	1.2	1.2
Leaf margins	Serrate	Serrate	Serrate
Shape of teeth	Apiculate	Apiculate	Apiculate
Leaf serrations per leaflet	28.6	27.3	22.7
Color mature leaves lower surface	Green Group 137C	Green Group 137C	Green Group 137C
Color mature leaves upper surface	Green Group 137A	Green Group 137A	Green Group 137A
Number of leaflets	3	3	3
Terminal leaflet apex shape	Obtuse	Obtuse	Obtuse
Terminal leaflet base shape	Accute cuneate	Accute cuneate	Accute cuneate
Glossiness upper side leaf surface	Semi-gloss	Semi-gloss	Semi-gloss
Texture upper side leaf surface	Very slightly rugose	Very slightly rugose	Very slightly rugose
Texture underside leaf surface	Very slightly reticulate	Very slightly reticulate	Very slightly reticulate
Leaf arrangement	Individual trifoliolate leaves attached to compressed stem (crown) at ground level	Individual trifoliolate leaves attached to compressed stem (crown) at ground level	Individual trifoliolate leaves attached to compressed stem (crown) at ground level

Table 4 shows information about the petiole, the petiolule, the bract and the stipule of the new cultivar compared to ‘Allstar’ and ‘Ovation’. This includes petiole length, petiole diameter, petiole texture, petiole pubescence, petiole color, petiolule color, petiolule length, bract frequency, bract color designation, stipule length, stipule width, stipule color designation and anthocyanin intensity.

TABLE 4

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Leaf petiole length (cm)	18.0	24.2	21.0
Petiole diameter (cm)	0.5	0.5	0.4
Petiole texture	Smooth	Smooth	Smooth
Petiole pubescence	Medium	Sparse	Sparse
Petiole color	Yellow Green Group 144B	Yellow Green Group 144C with some anthocyanin	Yellow Green Group 144B
Petiolule color	Yellow Green Group 144B	Yellow Green Group 144C	Yellow Green Group 144B
Petiolule length (cm)	0.4	0.8	0.4
Bract frequency	2 per inflorescence, generally unifoliate	2 per inflorescence, generally unifoliate	1 to 2 per inflorescence, generally unifoliate
Bract color	Yellow-Green 147A	Yellow-Green 147A	Yellow-Green 147B
Stipule length (cm)	2.4	2.3	1.9
Stipule width (cm)	0.8	0.8	0.6
Stipule color	Absent to very weak	Very weak to weak	Medium
Anthocyanin intensity	Red 46B over Yellow-Green 144C	Red 46B over Yellow-Green 144C	Red 46B over Yellow-Green 144C

Table 5 shows stolon characteristics of the new cultivar compared to ‘Allstar’ and ‘Ovation’. These characteristics include the number of stolons, the anthocyanin coloration of the stolons, the thickness of the stolons, and the pubescence of the stolons.

TABLE 5

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Stolon production	9	10	11
Stolon anthocyanin	Medium	Light	Medium
Stolon thickness (cm)	0.3	0.3	0.2
Stolon pubescence	Sparse to medium	Sparse	Sparse to medium

Table 6 shows inflorescence characteristics of the new cultivar compared to ‘Allstar’ and ‘Ovation’. These characteristics include inflorescence position relative to foliage, flower type, flower size, petal shape, relative petal spacing, petal apex shape, petal margin, petal base shape, petal length, petal width, petal length/width ratio, number of petals, petal color, stigma color, style color, anther color, filament color, flower truss type, and anther number.

TABLE 6

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Inflorescence position	Slightly below to slightly above canopy	Slightly below canopy	At or slightly below canopy
Flower type	Complete simple	Complete simple	Complete simple
Flower diameter (cm)	3.6	3.7	3.4
Petal shape	Circular to obovate	Circular to obovate	Circular to obovate

TABLE 6-continued

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Petal spacing	Touching to overlapping	Touching to overlapping	Overlapping
Petal apex shape	Circular	Circular	Circular
Petal margin	Entire	Entire	Entire
Petal base shape	Obovate	Obovate	Obovate
Petal length (cm)	13.0	13.0	12.7
Petal width (cm)	11.6	12.5	12.2
Petal length/width ratio	1.13	1.04	1.00
Petal count	8.0	7.2	7.2
Petal color	White Group 155D	White Group 155D	White Group 155D
Stigma color	Yellow-Orange Group 22A	Yellow-Orange Group 22B	Yellow-Orange Group 20B
Style color	Yellow-Green Group 150A	Yellow-Green Group 150B	Yellow-Green Group 150A
Anther color	Yellow-Orange Group 20A	Yellow-Orange Group 20A	Yellow-Orange Group 20A
Filament color	Yellow-Green Group 150C	Yellow-Green Group 150D	Yellow-Green Group 150D
Blooming habit	Spring bloomer	Spring bloomer	Spring bloomer
Anther number	33.2	24.6	22.2

Table 7 shows fruit characteristics of the new cultivar compared to ‘Allstar’ and ‘Ovation’. These characteristics include number of berries per truss, fruiting truss attitude, fruit length, fruit diameter, fruit length/width ratio, fruit weight, relative fruit size, predominant fruit shape, difference in shape between primary and secondary fruit, fruit glossiness, fruit core color, fruit cavity size, band without achenes, evenness of fruit surface, top color, non-blush side color, blush side color, internal color, achene color, achene count per fruit, calyx color, insertion of calyx, pose of calyx segments, size of calyx in relation to fruit, ease of calyx removal, firmness of flesh, evenness of flesh color, distribution of flesh color, sweetness, acidity, Brix, pH, titratable acidity, texture when tasted, time of flowering, harvest maturity (50% of plants with ripe fruit), type of bearing, and yield.

TABLE 7

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Number of berries per fruiting truss	9.2	11.3	13.5
Fruiting truss attitude	Prostrate	Prostrate	Prostrate
Diameter fruit (cm)	4.8	4.3	3.5
Length fruit (cm)	4.2	4.3	4.2
Ratio fruit length/width	0.9	1.0	1.2
Weight of fruit (g)	18.5	10.0	13.9
Relative fruit size	Medium to Large	Medium	Medium to Large
Predominant fruit shape	Conic to globose conic	Conic	Conic
Difference in shape between primary and secondary fruits	Slight, more uniform	Moderate	Moderate
Fruit glossiness	Strong	Strong	Strong
Fruit core color	Light red	Light red	Light red
Fruit cavity size	Absent to small	Absent to small	Absent to small
Band without achenes	Absent to very narrow	Absent to moderate	Absent to moderate
Evenness of	Very even	Even to slightly	Even to slightly

TABLE 7-continued

Characteristic	‘Cordial’	‘All star’	‘Ovation’
fruit surface		uneven	uneven
Color of top of fruit	Red Group 45A	Red Group 44A	Red Group 45A
Non-blush side color	Red Group 44A	Orange-Red Group 33A	Red Group 44A
Blush side color	Red Group 45A	Red Group 45A	Red Group 45A
Internal flesh color	Orange-Red Group 33A 33B, White 155D	Orange-Red Group 33A 33B 33C, Orange-White Group 159D	Orange-Red Group 33A 33B, White 155D
Achene position	At surface	At surface	At surface
Achene color	Yellow-Green Group 153B, Red Group 45A 519	Greyed-Yellow Group 160A, Red Group 45A 397	Greyed-Yellow Group 160B, Red Group 45A 248
Achene count			
Insertion of calyx	At surface	At surface slightly necked	At surface to slightly necked
Calyx color	Yellow-Green 148B	Yellow-Green 148B	Yellow-Green 148B
Pose of calyx segments	Reflexed to spreading	Reflexed to clasping	Reflexed to spreading
Size of calyx in relation to fruit	Same to larger	Same to slightly larger	Slightly smaller to slightly larger
Ease of calyx removal	Difficult	Difficult	Difficult
Firmness of flesh	Firm	Medium to firm	Medium to firm
Evenness of flesh color	Somewhat even	Not even	Uneven
Distribution of flesh color	Orange-red heart, slightly darker exterior, white near the proximal end	Relatively large light orange-red heart, very pale ring and lines radiating to achenes, orange red exterior,	Orange-red heart, white ring, orange red exterior, with visible lines towards each achene
Sweetness	Medium	Medium	Medium
Acidity	Mild	Mild	Mild

TABLE 7-continued

Characteristic	‘Cordial’	‘All star’	‘Ovation’
Brix (percent soluble solids)	7.6	7.5	7.8
pH	3.79	3.85	3.55
Texture when tasted	Fine and juicy	Fine and juicy	Fine and juicy
Time of flowering	April to May	April to May	April to May
Harvest maturity (50% of plant with ripe fruit)	Early June	Late May	Early June
Type of bearing	Short Day/June Bearing	Short Day/June Bearing	Short Day/June Bearing
Yield (kg/plant)	0.79	0.61	0.54

COMPARISON WITH PARENTAL AND OTHER CULTIVARS

When ‘Cordial’ is compared to female parent, B1893 (unpatented), the fruits are less susceptible to *Botrytis* fruit rot (*Botrytis cinerea*). When ‘Cordial’ is compared to male parent, B1805 (unpatented), a full sibling of ‘Keepsake’ (U.S. Plant Pat. No. 30,578), the fruits are more resistant to anthracnose fruit rot (*Colletotrichum acutatum*) and produce more stolons (runners). ‘Cordial’ plants respond to powdery mildew (*Spaerotheca macularis*), leaf blight (*Phomopsis obscurans*), leaf scorch (*Diplocarpon earliana*), and common leaf spot (*Mycosphaerella fragariae*) similarly to those of ‘Allstar’ and are less susceptible than ‘Ovation’ plants. ‘Cordial’ plants respond to bacterial angular leafspot (*Xanthomonas fragariae*) similarly to those of ‘Ovation’ and are less susceptible than ‘Allstar’ plants.

We claim:

1. A new and distinct cultivar of strawberry plant named ‘Cordial’, substantially as illustrated and described herein.

* * * * *

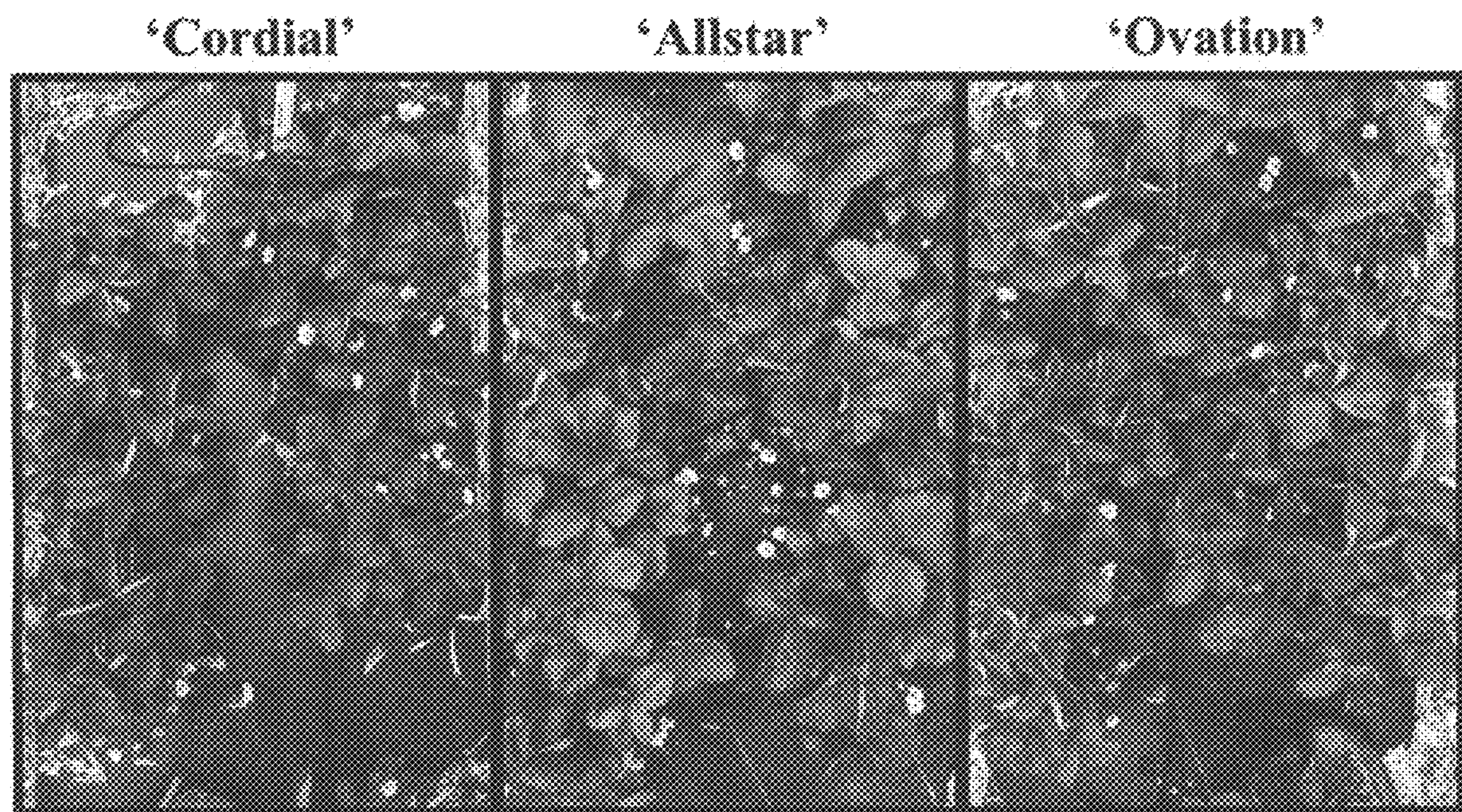


FIG. 1



FIG. 2



FIG. 3

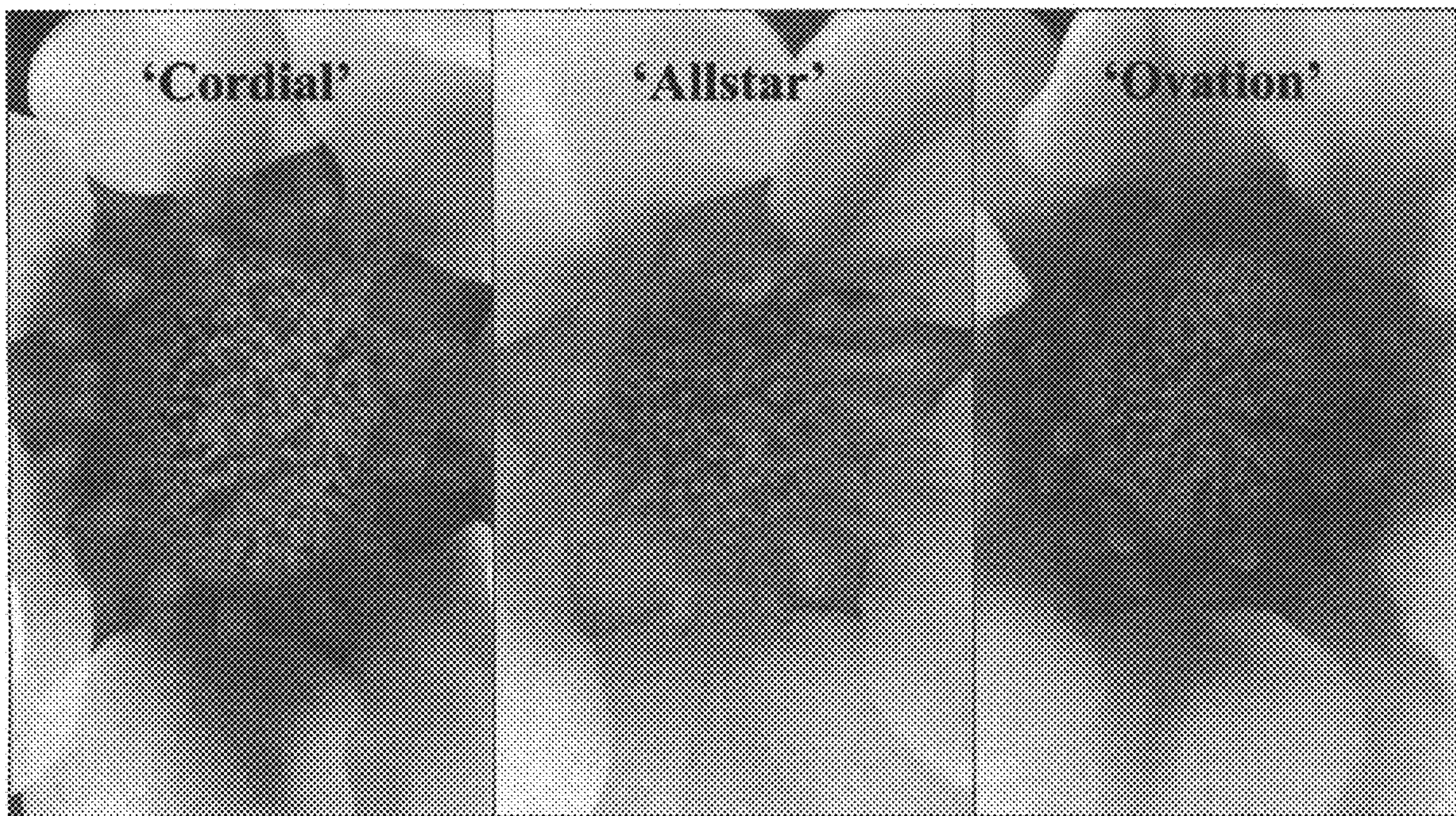


FIG. 4



FIG. 5



FIG. 6

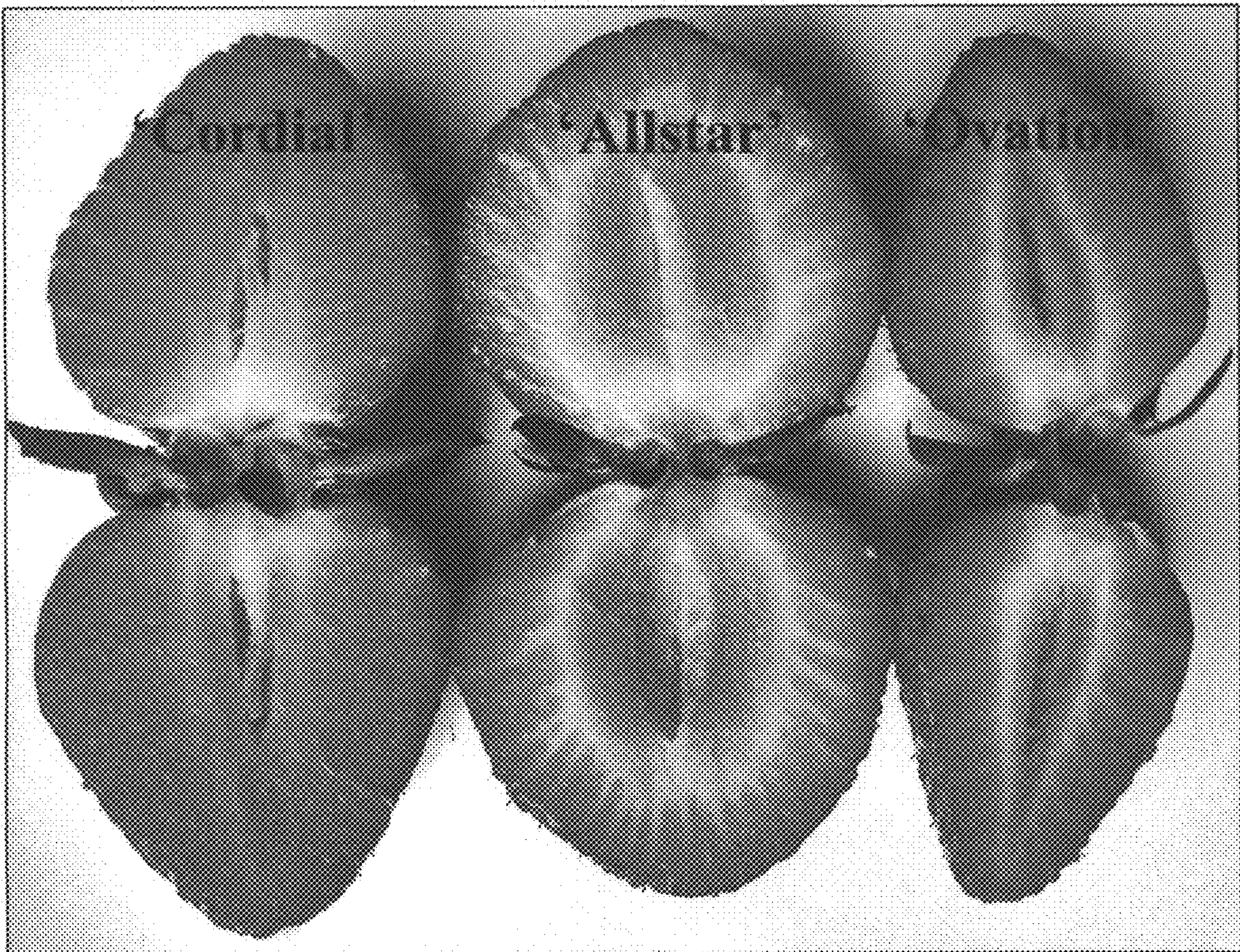


FIG. 7