Crippling
A Genetic issue in Yellow and Art-Shade Cattleyas

And an update of primary hybrids associated with

American Cattleyas –
Species and Outstanding Clones that Defined American Hybridizing Emphasis on Primary Grexes

In the June 2010 issue of Orchids, Ron Midgett discussed the little mention (but well known) issue of crippling, a genetic problem, in yellow and art-shade Cattleyas. It was the bane of efforts to breed good nonfading yellow cattleyas because the parents with the best color crippled.

C. dowiana
'Amanda Sofia' AM/AOS
Apr 2016, NS 11.5 x 16.2 cm

Crippling, which caused a thickening of tissue in the petal, became worse with age (the older the plant, the worse the crippling). It would start as a slightly thickened line of tissue running more or less parallel to the long axis of the petal. It is thought that this tissue was an attempt to create another stamen because in the worst cases a knob of tissue would form at the distal end of the thickened tissue. Inside this knob, one could usually find poorly formed but unmistakable pollinia. In the two pictures of Rhyncholaeliocattleya Golden Queen 'Regina' (Golden Crown x C. Miguelito), one shows a flower without crippling and the second, taken at a later blooming, show's severe crippling. This disfigurement of the flower was disheartening. Crippling is a genetic problem and continues in future bloomings, it is NOT sporadic (such as cultural related deformities).

[1] Normal flowers of *Rhyncholaeliocattleya* Golden Queen 'Regina' (Golden Crown × *C.* Miguelito). Grower: Rita Crothers.
[2] *Rhyncholaeliocattleya* Golden Queen 'Regina' with crippled flowers. Grower: Rita Crothers.

It is generally accepted that the crippling gene came from the use of a particular clone of Cattleya dowiana (hort. var. rosita), a form with creamy white sepals and petals tinged with purple. (There was another theory posed that crippling was a result of breeding C. dowiana with Cattleya bicolor that resulted in Cattleya Iris (1901). There was some fluke in the way the genes from these two species interacted that caused the problem.)

Cattleya breeders, Ernest Hetherington and Rita Crothers, in the 1950s to 1980 observed that two parent plants that tended to suppress or even prevent crippling. These two were Rhyncholaeliocattleya Xanthette 'Chartreuse' (Mindenette x Xanthedo) and Rhyncholaeliocattleya Primate 'Daffodil', AM/AOS (Primrose x Heatonensis). What is extra ordinary is that Rlc. Xanthette had one of the most notorious parents for crippling (Cattleya Mrs. Medo [Luminosa (1901) X Venus (1908)) on both sides of its parentage. Rhyncholaeliocattleya Primate 'Daffodil', AM/AOS, which has a rather interesting pedigree, had none of the suspect parent plants in its background. Both Rlc. Xanthette and Rlc. Primate were heavily influenced by Rhyncholaelia digbyana. The conclusion was that Rl. digbyana could suppress the crippling tendency coming from other parents.

The original article continues with discussion Yellow Cattleya breed at Stewart Orchids (Ernest Hetherington was the main hybridizer). To get a more rounded view of yellow and art-shade breeding I decided to generate the following 'heritage spreadsheet' with the grexes discussed not only in R. Midgett's article but also grexes mentioned in C. T. Hackney's book *American Cattleyas – Species and Outstanding Clones that Defined American Hybridizing* as well as a couple of my favorites.

Name	Parent	Parent	Year	F1 Offspr	Total Offspr	Originator	AOS Awards									
							FCC	AM	HCC	JC	AD	AQ	CCE	CCM	CHM	CBR	Total
C. Iris (1901)	C. bicolor	C. dowiana	1901	105	10577	Charlesworth Ltd.			2					1			3
C. Venus (1908)	C. dowiana	C. Iris (1901)	1908	36	9194	Charlesworth Ltd.											0
C. Mrs. Medo	C. Luminosa (1901)	C. Venus (1908)	1922	73	8418	S. Low											0
C. Aeneas	C. dowiana	C. Venus (1908)	1917	8	2942	Charlesworth Ltd.											0
C. Grandee (1937)	C. Mrs. Medo	C. Aeneas	1937	25	2930	Armacost											0
C. Octave Doin	C. dowiana	C. mendelii	1899	98	8557	Maron											0
C. Miguelito	C. dowiana	C. Octave Doin	1916	1	1434	Black & Flory											0
Rlc. Mrs. M. Gratrix (1899)	Rl. digbyana	C. cinnabarina	1899	16	3139	Veitch											0
Rlc. Joan	Rlc. Mrs. M. Gratrix (1899)	C. Octave Doin	1912	6	1613	Charlesworth Ltd.											0
Rlc. Golden Crown	Rlc. Joan	C. Venus (1908)	1920	14	1514	Charlesworth Ltd.											0
Rlc. Golden Queen	Rlc. Golden Crown	C. Miguelito	1928	24	1433	Paterson											0
Rlc. Capella (1938)	Rlc. Golden Queen	C. Orebus	1938	4	890	Charlesworth Ltd.											0
Rlc. Robert Gifford	Rlc. Golden Queen	Rlc. Nugget	1958	20	502	Miyamoto		1	2								3
Rlc. Golden Gifford	Rlc. Robert Gifford	Rlc. Golden Queen	1975	7	455	Miyamoto											0
Rlc. Cooksonii	Rlc. Mrs. M. Gratrix (1899)	C. dowiana	1909	9	2573	Charlesworth Ltd.											0
Rlc. Tucuman	Rlc. Cooksonii	C. Rhoda (1908)	1917	9	2564	Lacroze											0
Rlc. Ophelia	Rlc. Tucuman	C. Luminosa (1901)	1927	23	1057	Charlesworth Ltd.											0
Rlc. Zamilla	Rlc. Ophelia	C. Weedonaurea	1947	2	888	Charlesworth Ltd.			1								1
Rlc. Camilla	Rlc. Zamilla	Rlc. Capella (1938)	1956	15	886	Jeal			3								3
Rlc. Golden Galleon	Rlc. Xanthette	Rlc. Camilla	1962	53	819	Clark Day			2								2
Rlc. Norma Briscoe	Rlc. Golden Galleon	Rlc. Bobby Ward	1975	8	149	Clark Day											0
Rlc. Angkinantana	Rlc. Norma Briscoe	Rlc. Vichitr Gold	1985	13	135	P. Yeakyen											0
Rlc. Campobello	Rlc. Chatooga River	Rlc. Golden Galleon	1982	27	35	Carter & Holmes		1	1					2			4
Rlc. Golden Slippers	Rlc. Helen Morita	Rlc. Golden Galleon	1967	107	460	Stewart Inc.		2	5								7
Rlc. Daybreak	Rlc. Golden Slippers	Rlc. Deesse	1979	13	31	D. Herman											0
Rlc. Trojan Gold	Rlc. Golden Slippers	Rlc. Primate	1974	4	4	H. Crothers			1								1
Rlc. Tucurano	Rlc. Tucuman	Rlc. Sofrano	1929	5	1629	Charlesworth Ltd.											0
Rlc. Zanturano	Rlc. Tucurano	Rlc. Zante	1943	20	1623	Charlesworth Ltd.											0
Rlc. Glorious	C. Solario	Rlc. Zanturano	1951	27	1334	McDade											0
Rlc. Glorious Gold	Rlc. Jane Helton	Rlc. Glorious	1961	6	1284	Rivermont											0
Rlc. Pink Surprise	Rlc. Glorious Gold	C. loddigesii	1978	5	1271	A. Tharp											0
Rlc. Waikiki Gold	Rlc. Pink Surprise	C. forbesii	1978	208	1238	Miyamoto		3	4								7
C. Luminosa (1901)	C. dowiana	C. tenebrosa	1901	176	11452	Charlesworth Ltd.			3								3
C. Carmencita	C. Luminosa (1901)	C. dowiana	1912	38	4151	Goodson											0
C. Ruth (1936)	C. Carmencita	C. Triumphans	1936	11	229	S. Low											0
C. Mornay	C. Luminosa (1901)	C. Hardyana (1896)	1923	5	204	Perrin			1								1
C. Sylph (1915)	C. Luminosa (1901)	C. warscewiczii	1915	2	2382	St. Quintin											0
C. Iridescens	C. bicolor	C. wallisii	1909	14	8760	Hassall											0
C. Sibyl (1914)	C. dowiana	C. Iridescens	1914	12	4778	Hassall											0
C. Litana	C. Thyone (1912)	C. Sibyl (1914)	1922	1	3734	Cowan											0
C. Canberra	C. Litana	C. Venus (1908)	1927	67	3733	Cowan											0
C. Nugget	C. Canberra	C. Mrs. Medo	1935	25	2673	Sanders [St. Albans]											0
C. Derna	C. Nugget	C. dowiana	1941	23	2608	Black & Flory		1	1					1			3
C. Lorraine Shirai	C. Derna	C. Luminosa (1901)	1952	89	473	Shirai		8	3								11
C. Odessa	C. Canberra	C. Ruth (1936)	1941	6	143	Black & Flory			1								1
C. Annette (1919)	C. quadricolor	C. warscewiczii	1919	14	1949	McBean's											0
Rlc. Mrs. J. Leemann	Rl. digbyana	C. dowiana	1902	169	8595	Maron		1									1
Rlc. Sofrano	Rlc. Mrs. J. Leemann	C. Iridescens	1917	5	5882	Sanders [St. Albans]	1										1
Rlc. Zante	Rlc. Sofrano	C. Luminosa (1901)	1929	3	4019	Charlesworth Ltd.											0
Rlc. Midenette	Rlc. Zante	C. Mrs. Medo	1941	10	2743	L. Sherman Adams											0
Rlc. Mithra	Rlc. Amber	Rlc. Sofrano	1926	4	1618	Bruno Schroder											0
Rlc. Golden Myth	Rlc. Mithra	C. Golden Gleam	1949	48	1566	McDade			2								2
Rlc. Buttercup	Rlc. Primate	Rlc. Golden Myth	1961	94	1185	Rivermont		1	7								8
Rlc. Termthong	Rlc. Vichitr Gold	Rlc. Buttercup	1987	5	55	Parichart											0
Rth. Bouton D'Or	Ctt. Wolteriana	Rlc. Buttercup	1968	136	636	E. J. Small		2	5					3			10
Rlc. Minerva (1910)	Rlc. Mrs. J. Leemann	C. dowiana	1910	8	2263	Lambeau											0
Rlc. Llewellyn	Rlc. Minerva (1910)	C. Mrs. Medo	1937	26	2250	Manda											0
Rlc. Walter Abe	Rlc. Llewellyn	C. Kaumana	1954	5	1025	W. Abe			1								1
Rlc. Waikiki Sunset	Rlc. Walter Abe	C. Waianae Sunset	1966	67	786	Miyamoto		2									2
Rlc. Waianae Queen	Rlc. Golden Gifford	Rlc. Waikiki Sunset	1983	7	205	Miyamoto											0

Rlc. Apricot Flare	Rlc. Fortune	Rlc. Waianae Queen	1983	43	112	Miyamoto		2	1									3
Rlc. Everest (1914)	Rlc. Mrs. J. Leemann	C. Canhamiana	1914	3	1699	Sanders [St. Albans]												0
Rlc. Nanette	Rlc. Everest (1914)	C. Annette (1919)	1932	83	1696	S. Low		4						1				5
Rlc. Blanche Okamoto	C. Canberra	Rlc. Nanette	1952	14	1355	Kodama			1									1
Rlc. Lleblanche	Rlc. Llewellyn	Rlc. Blanche Okamoto	1975	3	1205	Miyamoto												0
Rlc. Faye Miyamoto	C. Amber Glow	Rlc. Lleblanche	1975	43	1202	Miyamoto												0
Rlc. Tassie Barbero	Rlc. Fortune	Rlc. Faye Miyamoto	1983	15	407	Miyamoto			1									1
Rlc. Williette Wong	Rlc. Tassie Barbero	Rlc. Toshie Aoki	1990	32	38	Edw. Wong		1	2									3
Rlc. Toshie Aoki	Rlc. Faye Miyamoto	Rlc. Waianae Flare	1980	224	950	Miyamoto		7	6	1								14
Rlc. Memoria Benigno Aquino	Rlc. Toshie Aoki	Rlc. Waikiki Gold	1983	27	63	A. Tanco		1	1									2
Rlc. Betty Whang	C. Amber Glow	Rlc. Toshie Aoki	1990	0	0	Kodama		1										1
Rlc. David Dolge	C. Mary Ellen Carter	Rlc. Toshie Aoki	1995	0	0	Carter & Holmes		1	1									2
Rlc. Hawaiian Eruption	Rlc. Toshie Aoki	Rlc. Lorraine Malworth	1994	1	1	Kodama												0
Rlc. Vilmoriniana	Rlc. Mrs. J. Leemann	C. mossiae	1910	29	185	Maron												0
Rlc. Zeecrabbe	Rlc. Vilmoriniana	C. Abyssinia	1946	11	15	Sanders [St. Albans]		1										1
C. Ophir	C. dowiana	C. xanthina	1901	33	8600	Veitch												0
Rlc. The Baroness	Rlc. Mrs. J. Leemann	C. Ophir	1913	46	6434	Bruno Schroder												0
Rlc. Xanthea	Rlc. The Baroness	Rlc. Sofrano	1928	21	4341	Charlesworth Ltd.												0
Rlc. Xanthedo	Rlc. Xanthea	C. Mrs. Medo	1939	26	2764	Charlesworth Ltd.	1											1
Rlc. Xanthette	Rlc. Midenette	Rlc. Xanthedo	1948	57	2698	L. Sherman Adams		4	1	1								6
Rlc. Memoria Helen Brown	Rlc. Xanthette	C. Ann Follis	1967	168	423	Stewart Inc.		4	11									15
Rlc. Living Legend	Rlc. Memoria Helen Brown	Rlc. Primate	1983	3	3	Stewart Inc.		2										2
Rlc. William Stewart	Rlc. Xanthette	Rlc. Golden Slippers	1973	32	39	Stewart Inc.		4	10									14
Rlc. Sheer Melody	Rlc. Helen Morita	Rlc. Xanthette	1965	3	8	Stewart Inc.												0
Rlc. Cadmium Light	C. forbesii	Rlc. Xanthette	1966	19	44	Stewart Inc.		1	3	1								5
Rlc. Green Giant	C. guttata	Rlc. Xanthette	1962	19	24	F. Gamble												0
Rlc. Oregon Pine	Rl. digbyana	Rlc. Xanthette	1970	0	0	Stewart Inc.		1	2									3
Rlc. Fortune Teller	Rlc. Xanthette	C. Tropic Flare	1966	35	166	Stewart Inc.		2	3									5
Rlc. Dorothy Drury-Lowe	Rlc. Xanthea	C. Lembera (unknown parents)	1938	2	2303	Charlesworth Ltd.												0
Rlc. Jane Helton	Rlc. Dorothy Drury-Lowe	Rlc. Xanthea	1950	106	2288	McDade		5	3									8
Rlc. Lemon Tree	Rlc. Jane Helton	C. Paprika	1970	55	471	Stewart Inc.			5			1						6
Rlc. Haw Yuan Gold	Rlc. Lemon Tree	Rlc. Tassie Barbero	1997	74	88	Haw Yuan		1										1
Rlc. Amber	Rlc. The Baroness	C. dowiana	1920	9	1637	Bruno Schroder												0
Rlc. Yellow Peril	Rlc. The Baroness	C. Odessa	1960	16	130	Nancy Ann Abbott												0
Rlc. Malvern	Rlc. The Baroness	C. Canberra	1943	72	697	Black & Flory		1	2									3
Rlc. Malworth	C. Charlesworthii (1900)	Rlc. Malvern	1963	177	358	Jones & Scully	1	3	1									5
Rlc. Malworth	C. Joyce Hannington	Rlc. Malvern	1963	177	358	Jones & Scully	1	3	1									5
Rth. Malworth D'Or	Rlc. Malworth	Rth. Bouton D'Or	1983	5	11	J. Redlinger			1									1
Rlc. Lorraine Malworth	C. Lorraine Shirai	Rlc. Malworth	1971	22	50	Jones & Scully	1	3										4
Rlc. South Island	Rlc. Campobello	Rlc. Malworth	1988	1	1	Carter & Holmes												0
Rlc. Maui Gold	Rlc. Malworth	Rlc. Goldenzelle	1992	0	0	M. Spencer												0
C. Thyone (1912)	C. Ophir	C. dowiana	1912	35	5129	Ralli												0
C. President Wilson (1918)	C. Thyone (1912)	C. dowiana	1918	19	1601	Armstrong/Brown												0
Rlc. Gillian	Rlc. Lotus	C. President Wilson (1912)	1936	11	507	S. Low												0
Rlc. Helen Morita	Rlc. Gillian	Rlc. Consul Greig	1953	24	495	R. Kiesewetter			1									1
C. Jane Dane	C. Britannia	C. President Wilson (1912)	1937	18	1097	Dane		2										2
C. Ethel Merman	C. Jane Dane	C. Canhamiana	1952	3	784	H. Patterson												0
C. Ann Follis	C. granulosa	C. Ethel Merman	1963	78	772	Rod McLellan Co.		4	7		1	1		1				14
C. Consul Greig	Rlc. Golden Crown	C. Thyone (1912)	1938	12	511	S. Low												0
C. Myra (1895)	C. trianae	C. crispata	1895	21	2930	Veitch												0
C. Trimyra	C. Myra (1895)	C. trianae	1910	5	2873	Lawrence												0
C. Primrose	C. Trimyra	C. schroederae	1918	4	1493	Sanders [St. Albans]												0
Rlc. Imperatrice de Russie	Rl. digbyana	C. mendelii	1899	38	2110	Maron												0
Rlc. Primrose	Rlc. Imperatrice de Russie	C. Primrose	1930	2	1489	Sanders [St. Albans]												0
C. Hardyana (1896)	C. dowiana	C. warscewiczii	1896	312	20577	Cookson	1	5	2	1								9
Rlc. Heatonensis	Rl. digbyana	C. Hardyana (1896)	1902	38	3304	Charlesworth Ltd.												0
Rlc. Primate	Rlc. Primrose	Rlc. Heatonensis	1941	18	1487	Sanders [St. Albans]		1										1
Rlc. Destiny	Rlc. Xanthette	Rlc. Primate	1968	67	281	Stewart Inc.		4										4
Rlc. Haadyai Delight	Rlc. Angkinantana	Rlc. Destiny	1999	55	95	S. Sanimthong		1										1
Rlc. Memoria Srivilas Gold	Rlc. Fortune	Rlc. Haadyai Delight	1999	12	13	K. Phinyophan			1									1
Rlc. Mamie Fouraker	C. Grandee (1937)	Rlc. Primate	1959	12	44	Bracey			1									1
C. Adula	C. bicolor	C. Hardyana (1896)	1905	34	4814	Charlesworth Ltd.												0
C. Thebes	C. Adula	C. dowiana	1914	15	4755	Fowler	1											1
C. S. J. Bracey	C. Mrs. Medo	C. Thebes	1940	89	4729	Armacost		3	1	1								5
C. Memoria Albert Heineke	C. Grandee (1937)	C. S. J. Bracey	1949	74	2197	Bracey			8									8
Rlc. Fortune	C. Memoria Alber Heineke	Rlc. Xanthette	1963	183	1580	Stewart Inc.		6	6									12
Rlc. Goldenzelle	Rlc. Fortune	C. Horace	1982	217	339	J. Hanes		14	15	1				1				31
Rlc. Color Magic	Rlc. Fortune	C. Lorraine Shirai	1977	5	12	J. Rehfield		1										1

Rlc. Fortumate	Rlc. Fortune	C. Primate	1983	0	0	Stewart Inc.		1										1
Rlc. Joyance	Rlc. Ojai	C. S. J. Bracey	1948	25	284	Armacost												0
Rlc. Bobby Ward	Rlc. Joyance	C. Grandee (1937)	1964	20	214	Armacost			1									1
C. Lee Langford	C. Calizona	C. S. J. Bracey	1948	96	1138	Ozzella												0
C. Golden Gate	C. S. J. Bracey	C. Isotta	1954	41	357	Rod McLellan Co.			1									1
C. Los Angeles	C. Golden West	C. S. J. Bracey	1949	2	967	Armacost												0
Rlc. Cheah Bean-Kee	C. Los Angeles	Rlc. Norman's Bay	1964	2	965	Wm. Kirch Orchids		1										1
C. John Harry Jenkins	C. Fedora	C. S. J. Bracey	1964	1	956	C. Hoshino			1									1
Rlc. Waianae Flare	C. John Harry Jenkins	Rlc. Cheah Bean-Kee	1980	5	955	Miyamoto												0
C. Mary Ellen Carter	C. S. J. Bracey	C. Amber Glow	1983	29	65	Carter & Holmes			1									1
C. Prince John	C. dowiana	C. Hardyana (1896)	1913	33	1260	Armstrong/Brown												0
C. Condrey	C. Luminosa (1901)	C. Prince John	1932	3	854	O. Tucker												0
Rlc. Green-heart	Rlc. Heatonensis	C. Condrey	1954	41	845	Sanders [St. Albans]		1	3									4
Rlc. Acapana	C. Grandee (1937)	Rlc. Green-heart	1961	32	556	Bracey			2									2
Rlc. Vichitr Gold	Rlc. Acapana	C. Mornay	1985	13	135	P. Yeakyen												0
C. Mrs. Edward Roehrs	C. dowiana	C. Prince John	1922	4	340	Roehrs												0
C. Robert H. Jewell	C. Hardyana (1896)	C. Mrs. Edward Roehrs	1930	12	328	Kirkwood		1										1
C. Sara Cohn	C. dowiana	C. Robert H. Jewel	1949	12	69	H. Patterson												0
C. Manzanita (1957)	C. tigrina	C. Sara Cohn	1957	5	46	Beall												0
C. Sand Island	C. Manzanita (1957)	C. Redtop Mountain	1967	2	41	Beall												0
Rlc. Chatooga River	C. Sand Island	Rlc. Deesse	1982	4	39	Carter & Holmes												0
C. Rhoda (1908)	C. Hardyana (1896)	C. Iris (1901)	1908	31	2689	Charlesworth Ltd.												0
C. Haroldiana	C. Hardyana (1896)	C. tenebrosa	1901	48	4686	Charlesworth Ltd.												0
C. Orion	C. Haroldiana	C. dowiana	1909	16	3042	Charlesworth Ltd.												0
C. Senate	C. Orion (1909)	C. labiata	1920	5	2386	S. Low												0
C. Mysia	C. Senate	C. Sylph (1915)	1929	4	2374	Charlesworth Ltd.												0
C. Mysedo	C. Mrs. Medo	C. Mysia	1946	23	2358	Charlesworth Ltd.												0
C. Golden West	C. Orion (1909)	C. Triumphans	1936	5	972	Armacost												0
C. Calizona	C. Haroldiana	C. Triumphans	1941	3	1430	Armacost												0
C. Arachne	C. Haroldiana	C. labiata	1908	1	1384	Charlesworth Ltd.												0
C. Linda (1917)	C. Arachne	C. dowiana	1917	11	1383	McBean's												0
C. Ramona (1928)	C. Meuse	C. Linda (1917)	1928	41	1334	McBean's	2	2										4
C. Saint Gothard (1908)	C. Gottoiana	C. Hardyana (1896)	1908	108	6370	Charlesworth Ltd.												0
C. Serbia	C. Saint Gothard (1908)	C. Enid (1898)	1915	45	4361	Charlesworth Ltd.												0
C. Profusion (1922)	C. Serbia	C. Hardyana (1896)	1922	30	4180	McBean's												0
C. Princess Margaret	C. Profusion (1922)	C. Clotho	1930	175	3492	McBean's		3	1									4
C. Dorothy Fried	C. Princess Margaret	C. Dinah	1943	50	2298	Armacost												0
C. Waianae Sunset	C. Dorothy Fried	C. Mysedo	1963	112	2161	Miyamoto		1	1									2
Rlc. Bruges (1934)	Rlc. Digbyano-mossiae	C. Hardyana (1896)	1934	5	110	Sanders [St. Albans]												0
Rlc. White Ball	Rlc. Bruges (1934)	C. George Eastman	1960	3	105	Chung-Chweng Chen												0
Rlc. Yellow Ball	Rlc. White Ball	Rlc. Yellow Peril	1975	12	102	You Nan Chang												0
Rlc. Gold Ho Hsing	Rlc. Yellow Ball	Rlc. Termthong	1990	1	4	Chen-Chin-Feng												0
Rlc. Taiwan Yellow Ball	Rlc. Gold Ho Hsing	Rlc. Apricot Flare	2004	3	3	Orchis Flor.												0
C. Sargon	C. Lustre (1907)	C. Hardyana (1896)	1915	90	8299	Sir George Holford												0
C. Isotta	C. Sargon	C. bicolor	1941	16	396	Alexander												0
C. Ishtar	C. Sargon	C. Fabia (1894)	1925	73	5598	Sir George Holford		1										1
C. Princess Royal	C. Fabia (1894)	C. Hardyana (1896)	1910	53	1074	W. R. Lee												0
C. Redtop Mountain	C. guttata	C. Princess Royal	1967	2	41	Beall												0
C. Rubens (1903)	C. Hardyana (1896)	C. pumila	1903	35	2778	Sanders [St. Albans]												0
C. Runah	C. Rubens (1903)	C. Dinah	1946	2	235	Benson												0
C. Miami (1947)	C. Runah	C. Sargon	1947	31	224	Alberts/Merkel	1	1										2
C. Tropic Flare	C. Miami (1947)	C. Ramona (1928)	1962	12	175	Alberts/Merkel												0
C. Empress Frederick	C. dowiana	C. mossiae	1888	129	11971	Veitch												0
C. Enid (1898)	C. mossiae	C. warscewiczii	1898	375	13422	Veitch	2	9	4					4				19
C. Rajah (1919)	C. Empress Frederick	C. Enid (1898)	1919	19	2256	S. Low												0
C. Clotho	C. Enid (1898)	C. trianae	1910	62	3775	Charlesworth Ltd.												0
C. Tityus	C. Enid (1898)	C. Octave Doin	1912	169	4726	Charlesworth Ltd.												0
C. Laguna	C. Dominiana (1899)	C. Tityus	1924	2	1728	Charlesworth Ltd.												0
C. Fedora	C. Laguna	C. Hardyana (1896)	1931	26	1721	Charlesworth Ltd.												0
Rlc. Meditation	Rlc. Deesse	C. Fedora	1974	105	537	W. Nishimoto		2	1									3
Rlc. Erin Kobayashi	Rlc. Meditation	Rlc. Waikiki Gold	1980	138	228	W. A. Chang		4	2									6
C. Queen Mary (1911)	C. mendelii	C. warneri	1911	16	2271	J. J. Holden												0
C. Woltersiana	C. Queen Mary (1911)	C. Rajah (1919)	1923	67	2272	Pauwels												0
C. Horace	C. trianae	C. Woltersiana	1938	267	1792	Flandria		2	1									3
C. Coronet (1902)	C. cinnabarina	C. harpophylla	1902	34	3921	Charlesworth Ltd.		2		1								3
C. Elinor	C. schroederae	C. Coronet (1902)	1908	33	3504	Charlesworth Ltd.			1									1
C. Golden Gem	C. intermedia	C. crispata	1905	3	1594	Unknown												0
C. Golden Fleece	C. Golden Gem	C. dowiana	1909	6	1591	Sir George Holford												0
C. Golden Gleam	C. Elinor	C. Golden Fleece	1934	7	1585	Alexander												0
C. G. S. Ball	C. schroederae	C. cinnabarina	1900	68	2035	Veitch								1				1

C. Orange Gem (1929)	C. Elinor	C. G. S. Ball	1929	58	919	Alexander			1									1
C. Psyche (1902)	C. cinnabarina	C. coccinea	1902	182	6076	Charlesworth Ltd.		3	2					1				6
C. Marathon	C. Empress Frederick	C. Psyche (1902)	1908	41	4702	Charlesworth Ltd.												0
C. Meuse	C. Marathon	C. Callistoglossa	1916	35	1498	Charlesworth Ltd.												0
C. Dominiana (1899)	C. dowiana	C. purpurata	1899	76	5341	Veitch												0
C. Anzac (1921)	C. Marathon	C. Dominiana (1899)	1921	305	2712	Charlesworth Ltd.		1						1				2
C. Paprika	C. Orange Gem (1929)	C. Anzac (1921)	1960	29	635	Stewart Inc.		4	12									16
C. Warnhamensis (1898)	C. trianae	C. cinnabarina	1898	17	2258	Lucas												0
C. Goldfinch	C. Warnhamensis (1898)	C. dowiana	1908	7	2238	Sir George Holford												0
Rlc. Digbyano-Warneri	Rl. digbyana	C. warneri	1902	21	4997	Chamberlain												0
C. Leda (1900)	C. dowiana	C. percivaliana	1900	100	5988	Maron												0
C. Fabia (1894)	C. dowiana	C. labiata	1894	297	13483	Veitch			1									1
C. Sylvia (1911)	C. dowiana	C. Fabia (1894)	1911	17	2390	Hassall												0
C. Goldfish	C. Goldfinch	C. Sylvia (1911)	1928	13	2229	Sanders [St. Albans]												0
C. Anne Walker	C. Carmencita	C. Goldfish	1937	11	2206	Sanders [St. Albans]												0
C. Amber Glow	C. Derna	C. Anne Walker	1952	175	2189	McDade	1	18	10					1				30
Rlc. Pervenusta (Sander)	Rl. digbyana	C. Fabia (1894)	1914	10	535	Sanders [St. Albans]												0
Rlc. Ojai	Rlc. Pervenusta (Sander)	C. Luminosa (1901)	1940	37	523	Armacost			2									2
C. Dionysius	C. Fabia (1894)	C. warscewiczii	1912	28	3407	C. J. Phillips												0
C. Cantuarie	C. Dionysius	C. labiata	1918	4	196	C. J. Phillips												0
C. George Eastman	C. Cantuarie	C. quadricolor	1930	13	191	S. Low												0
Rlc. Ferrieres	Rl. digbyana	C. Dionysius	1942	14	2650	Chassaing												0
Rlc. Deesse	Rlc. Ferrieres	C. Lamartine	1947	172	2629	Vacherot-Lecoufle		2	3									5
Rlc. Hannibal	Rlc. Digbyano-Warneri	C. Fabia (1894)	1920	7	4953	Sir George Holford												0
Rlc. Hartland	Rlc. Hannibal	C. Leda (1900)	1933	97	4936	S. Low	1	2	1									4
Rlc. Norman's Bay	Rlc. Hartland	C. Ishtar	1946	330	4490	S. Low	2	9	7	1				1				20
C. Canhamiana	C. mossiae	C. purpurata	1885	158	6157	Veitch		12	10				1	12				35
C. Britannia	C. Canhamiana	C. warscewiczii	1903	76	1875	Sanders [St. Albans]		1										1
C. Cappei (1889)	C. warscewiczii	C. cinnabarina	1889	16	1120	Cappe												0
C. Lord Rothschild	C. dowiana	C. gaskelliana	1893	67	7831	Sanders [St. Albans]			1									1
C. Scylla (1909)	C. Cappei (1889)	C. Lord Rothschild	1909	3	1088	Charlesworth Ltd.												0
C. Appam	C. Scylla (1909)	C. dowiana	1916	4	1085	Charlesworth Ltd.												0
C. Orebus	C. Appam	C. Venus (1908)	1925	12	916	Charlesworth Ltd.												0
C. Lamartine	C. Lord Rothschild	C. trianae	1926	12	2680	Charlesworth Ltd.												0
C. Weedoniensis (1899)	C. granulosa	C. mendelii	1899	1	895	T. W. Thornton												0
C. Weedonaurea	C. dowiana var. aurea	C. Weedoniensis (1899)	1916	4	894	Marlborough												0
C. Dupreana	C. warneri	C. warscewiczii	1906	145	5893	Lambeau			2									2
C. Elvina	C. schilleriana	C. trianae	1896	5	4696	Veitch												0
C. Dinah	C. Dupreana	C. Elvina	1919	112	4691	McBean's												0
C. Gottoiana	C. warneri	C. tenebrosa	1900	37	6491	Douglas												0
C. Martinetii	C. mossiae	C. tenebrosa	1899	61	1214	Maron												0
Rlc. Digbyano-mossiae	Rl. digbyana	C. mossiae	1889	76	3594	Veitch												0
Rlc. Pallas	Rlc. Digbyano-mossiae	C. warscewiczii	1915	9	1011	Sanders [St. Albans]												0
Rlc. Palmyre	Rlc. Pallas	C. Martinetii	1935	3	1001	Sanders [St. Albans]												0
Rlc. Nugget	Rlc. Palmyre	C. Luminosa (1901)	1941	64	975	Sanders [St. Albans]		2	1									3
Rlc. Lotus	Rlc. Digbyano-mossiae	C. rex	1917	7	535	Black & Flory												0
C. Flirtie	C. forbesii	C. crispata	1961	26	598	Miyamoto												0
C. Triumphans	C. dowiana	C. rex	1904	84	4315	Maron		1	1									2
C. Pua Liilii	C. loddigesii	C. Triumphans	1944	5	477	Hirose												0
C. Mary Miller	C. Pua Liilii	C. Psyche (1902)	1969	2	472	Wm. Kirch Orchids												0
Ctt. Tickety Boo	C. Mary Miller	Gur. aurantiaca	1969	14	470	R. K. Mizuta												0
Ctt. Kauai Starbright	C. Flirtie	Ctt. Tickety Boo	1982	135	455	Shimonishi Orchids		1	2					1				4
C. Intertexta	C. mossiae	C. warneri	1897	62	6172	Veitch												0
C. Caprice	C. G. S. Ball	C. Intertexta	1929	8	1038	Armacost												0
C. Kaumana	C. Caprice	C. Triumphans	1944	4	1029	Hirose												0
C. Charlesworthii (1900)	C. dowiana	C. cinnabarina	1900	79	1010	Charlesworth Ltd.			2									2
Ctt. Wolteriana	Gur. aurantiaca	C. schroederae	1909	28	684	Wolter		1		1								2
C. Callistoglossa	C. warscewiczii	C. purpurata	1882	89	12481	Veitch		1	3									4
C. Lustre (1907)	C. Callistoglossa	C. lueddemanniana	1907	81	10732	Sir George Holford												0
C. Aphrodite (1894)	C. mendelii	C. purpurata	1894	68	517	E. Rothschild												0
C. Bletchleyensis (1899)	C. warscewiczii	C. tenebrosa	1899	60	423	Leon												0
C. Aethiopian	C. Aphrodite (1894)	C. Bletchleyensis (1899)	1923	2	39	Sanders [St. Albans]												0
C. Abyssinia	C. Aethiopian	C. Tityus	1931	10	37	Sanders [St. Albans]												0
C. Chamberlainiana (1881)	C. dowiana	C. tigrina	1881	22	1378	Veitch												0
C. Antiope (1910)	C. Chamberlainiana (1881)	C. dowiana	1910	12	1353	Charlesworth Ltd.												0
C. Helga	C. Antiope (1910)	C. dowiana	1925	3	1341	Charlesworth Ltd.												0
C. Solario	C. dowiana	C. Helga	1938	3	1338	Charlesworth Ltd.												0
C. Beaufort	C. coccinea	C. luteola	1963	264	1340	Casa Luna		10	4	1				3				18
C. Cappei (1902)	C. schroederae	C. trianae	1902	8	1145	Cappe												0
C. Phoebe Snow	C. Cappei (1902)	C. lueddemanniana	1922	5	1133	Clem. Moore												0

C. Barbara Dane	C. labiata	C. Phoebe Snow	1932	28	1122	Dane	1											1
C. Suzanne Hye	C. gaskelliana	C. mossiae	1906	90	7477	Hye		2						1				3
C. Snowdon	C. labiata	C. Suzanne Hye	1914	32	1385	Armstrong/Brown												0
C. Joyce Hannington	C. Barbara Dane	C. Snowdon	1945	94	462	Dane	1	7	9					1				18

C. T. Hackney cited the following key species associated with 'outstanding' yellow and art-shade Cattleyas. From the above table, I determined the number of times a species was used as a primary parent. (Rl. digbyana highlighted light blue and small/mini cattleyas species highlighted green)

Key Yellow Species	**Used as primary parent**
C. dowiana (all var.)	39
Rl. digbyana	9
C. cinnabarina	7
C. tenebrosa	5
C. bicolor	4
C. crispata (L. flava)	3
C. rex	2
Gur. aurantiaca	2
C. xanthina	1
C. harpophylla	1

C. dowiana has been used as a parent of yellow cattleyas more than any other species based on the selected crosses in the above table. One detail to notice is that all the above species do not have the 'full' form or have 'non-standard cultural requirements' desired in today's hybrids. To obtain widely accepted hybrids, other species (as well as some additional sources of color in some cases) were introduced into the breeding program and are list below as well as the number of times they were used as primary parents.

'Other' species in Yellow Cattleya Hybridization	**Used as primary parent**
C. coccinea	2
C. forbesii	3
C. gaskelliana	2
C. granulosa	2
C. guttata	2
C. intermedia	1
C. labiata	6
C. loddigesii	2
C. lueddemanniana	2
C. luteola	1
C. mendelii	5
C. mossiae	8
C. percivaliana	1
C. pumila	1
C. purpurata	4
C. quadricolor	2
C. schilleriana	1
C. schroederae	5
C. tigrina	2
C. trianae	8
C. wallisii	1
C. warneri	5
C. warscewiczii	11

The other species used mostly to improve the desirability of yellow cattleya were C. warscewiczii followed by C. mossiae and C. trianae.

With the above information as background the pictures / information below is on some of the key primary / early hybrids (hopefully I have selected as some of your favorites) associated with yellow cattleyas.

C. Hardyana (1896)
'July's Freedom' FCC/AOS
Jul 2017, NS 15.6 x 18.1 cm

Key Primary Crosses and F1 Progeny

(Note: There has been extensive breeding within Cattleyas, with some grexes reported more than once)

C. Hardyana (1896)
Typical rose-lavender form

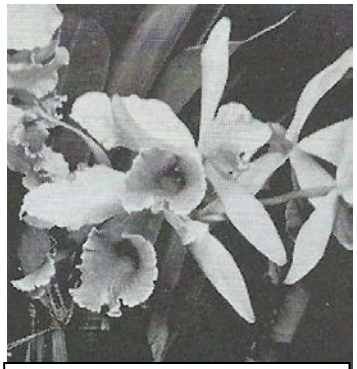
C. Hardyana (1896) (C. dowiana x C. warscewiczii), 1896, Cookson, 312 F1 and 20,577 total progeny, 9 AOS awards (1 FCC, 5 AMs, 2 HCCs, 1 JC). C. Hardyana has the third most F1 progeny (C. Enid number one followed by Rlc. Norman's Bay at number two) and the most total progeny of all grexes reviewed as well as being a parent in fourteen of the grexes in the above table of selected yellow cattleya heritage. C. Hardyana imparts excellent plant vigor, floriferousness, large flower size and bright lip color.

There are three color forms of C. hardyana; rose-lavender (typical), semi-alba, and yellow, as well as a natural hybrid C. x hardyana. Only two yellow forms ('Reginae' and 'Clement Moore') have been found and both 'natural hybrids' collected in the late 1890s. Per A. A. Chadwick 2006 article in Orchids "Both … have remakably fine shape for a primary cross. … Because C. Hardyana is a naturally occurring hybrid, you have to instinctively ask what happens when a plant of C. Hardyana in the jungle crossbreeds with either a neighborly C. dowiana aurea or a friendly C. warscewiczii. As jungle plants, the offspring will undoubtredly be accepted as straight Cattleya Hardyana by the orchid experts – and Mother Nature will simply wink an eye and smile.

C. x hardyana
'Clement Moore'
Rare Yellow form

Some of the major early hybrids: **Rlc. Heatonensis** (Rl. digbyana x C. Hardyana (1896)), 1902, Charlesworth Ltd., 38 F1 and 3304 total progeny, no Awards; **C. S. J. Bracey** (C. Mrs. Medo x C. Thebes), 1940, Armacost, 89 F1 and 4729 total progeny, 5 AOS awards (3 AMs, 1 HCC, 1 JC); **C. Haroldiana** (C. Hardyana (1896) x C. tenebrosa), 1901, Charlesworth Ltd., 48 F1 and 4686 total progeny, no awards; **C. Saint Gothard (1908)** (C. Gottoiana x C. Hardyana (1896)), 1908, Charlesworth Ltd., 108 F1 and 6370 total progeny, no Awards; **C. Sargon** (C. Lustre (1907) x C. Hardyana (1896)), 1915, Sir George Holford, 90 F1 amd 8299 total progeny, no awards.

C. Heatonensis



C. Haroldiana

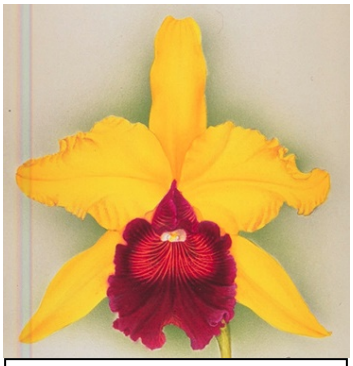
C. Sargon

C. S. J. Bracey
'Wailani' AM/AOS
Jul 2011, NS 15.5 x 15.0 cm

C. Luminosa (1901) (C. dowiana x C. tenebrosa), 1901, Charlesworth Ltd., 176 F1 and 11,452 total progeny, 3 HCC/AOS awards. C. T. Hackney states that C. Luminosa is 'clearly the most important early hybrid.' An observation, the earlier clones appear to have better shape and color than recently awarded clones. Select major hybrids: **C. Carmencita** (C. Luminosa (1901) x C. dowiana), 1912, Goodson, 38 F1 and 4151 total progeny, no AOS awards; **C. Waianae Sunset** (C. Dorothy Fried x C. Mysedo), 1963, Miyamoto, 112 F1 and 2161 total progeny, 2 AOS Awards (1 AM, 1 HCC); **Mrs. Medo** see below; **Rlc. Zante** (Rlc. Sofrano x C. Luminosa (1901)), 1929, Charlesworth Ltd., 3 F1 and 4019 total progeny, no awards; **Rlc. Nugget** (Rlc. Palmyre x C. Luminosa (1901)), 1935, Sanders (St. Albans), 64 F1 and 975 total progeny, 3 AOS awards; **C. Lorraine Shirai** (C. Derna x C. Luminosa (1901)), 1952, Shirai, 89 F1 and 473 total progeny, 11 AOS awards (8 AMs, 3 HCCs).

C. Luminosa 'Celest'
Early clone

C. Luminosa (1901)
'Exotic Orchids' HCC/AOS
May 2011, NS 14.1 x 17.2 cm



C. Carmencita
'Claygate Lodge' AM/RHS
Sep 1922

C. Waianae Sunset
'Pokai' AM/AOS
Sep 1966

Rlc. Nugget
'Ingham' AM/AOS
Apr 1951

C. Lorraine Shirai
'Union Trust' AM/AOS
Oct 1960

C. Mrs. Medo (C. Luminosa (1901) x C. Venus (1908)), 1922, S. Low, 73 F1 and 8418 total progeny, no AOS awards. I like to think of the C. Mrs. Medo family, named since C. Mrs. Medo has the largest number of total progeny (lines below), since most modern yellow with a red lip have one of these hybrids in their background. NOTE: As mentioned at the beginning of this report all of these grexes progeny are prone to crippling, can be reduced when Rl. digbyana is introduced:

- **C. Iris (1901)** (C. bicolor x C. dowiana), 1901, Charlesworth Ltd., 105 F1 and 10577 total progeny, 3 AOS awards (2 HCC, 1 CCM)
- **C. Venus (1908)** (C. dowiana x C. Iris ()1901), 1908, Charlesworth Ltd., 36 F1 and 9194 total progeny, no AOS awards.
- **C. Aeneas** (C. dowiana x C. Venus), 1917, Charlesworth Ltd., 8 F1 and 2942 total progeny, no AOS awards.
- **C. Grandee (1937)**, (Mrs. Medo x C. Aeneas), 1937, Armacost, 25 F1 and 2930 total progeny, no AOS awards. Entire grex is tetraploid.

C. Mrs. Medo
'Low' AM/RHS
Sep 2023

C. Iris
'King Edward VII' FCC/RHS
Sep 1923

C. Venus
'Princess Mary' FCC/RHS
Sep 1915

C. Aeneas
AM/RHS
Aug 1918

C. Grandee
'Jules Furthman'

Some of the major (based on total number of progeny) primary crosses with Mrs. Medo family are: **C. S. J. Bracey** (C. Mrs. Medo x C. Thebes), 1940, Armacost, 89 F1 and 4729 total progeny, 5 AOS awards (3 AMs, 1 HCC, 1 JC); **Rlc. Xanthette** (Rlc. Midenette x Rlc. Xanthedo), 1948, L. Sherman Adams, 57 F1 and 2698 total progeny, 1 FCC/AOS award; **C. Nugget** (C. Canberra x C. Mrs. Medo), 1935, Sanders [St. Albans], 25 F1 and 2673 total progeny, no AOS awards; **Rlc. Llewellyn** (Rlc. Minerva (1910) x C. Mrs. Medo), 1937, Manda, 26 F1 and 2250 total, no awards; **C. Waianae Sunset** (C. Dorothy Fried x C. Mysedo), 1963, Miyamoto, 112 F1 and 2161 total progeny, 2 AOS awards (1 AM, 1 HCC).

C. S. J. Bracey
'Wailani' AM/AOS
Jul 2011, NS 15.5 x 15.0 cm

Rlc. Xanthette
'Krull-Smith' AM/AOS
Aug 1983, NS 15.0 cm

Rlc. Llewellyn

C. Waiamae Sunset
'Pokai' AM/AOS
Sep 1966

C. Fabia (1894) (C. dowiana x C. labiata), Veitch, 1894, 175 F1 and 13483 total progeny, 1 HCC/AOS award. Although lavender and semi-alba (to almost pure white) forms are most common, yellow forms that were commonly used in the breeding of yellow cattleyas. Major progeny used in breeding modern yellow cattleyas: **C. Ishtar** (C. Sargon x C. Fabia (1894)), 1925, Sir George Holford, 73 F1 and 5598 total progeny, 1AM/AOS award; **C. Amber Glow** (C. Derna x C. Anne Walker), 1952, Mc Dade, 175 F1 and 2206 total progeny, 30 AOS awards (1 FCC, 18 AMs, 10 HCCs, 1 CCM), the entire grex is tetraploid and there is a tendency for the flowers to open in sheath; **C. Dionysius** (C. Fabia (1894) x C. warscewiczii), 1912, C. J. Phillips, 28 F1 and 3407 total progeny; **Rlc. Norman's Bay** (Rlc. Hartland x C. Ishtar), 1946, S. Low, 330 F1 and 4490 total progeny, 20 AOS awards (2 FCCs, 9 AMs, 7 HCCs, 1 JC, 1 CHM).

C. Fabia (1894)

C. Ishtar
'Exbury' FCC/RHS
Oct 1932

C. Amber Glow
'Tampa' AM/AOS
Jul 1968

C. Dionysius
FCC/RHS
Oct 1912

Rlc. Norman's Bay
'Lucile' FCC/AOS
Nov 1964

C. Beaufort (C. coccinea x C. luteola), 1963, Casa Luna, 264 F1 and 1340 total progeny, 18 AOS awards (10 AMs, 4 HCCs, 1 JC, 3 CCMs), the most used grex for hybridization of any single miniature and no Cattleya dowiana as a source of yellow. Select major progeny (most progeny): **Rth. Free Spirit** (Rth. Twentyfour Carat x C. Beaufort), 1990, H & R Nurseries, 133 F1 and 263 total progeny, 17 AOS awards (9 AMs, 7 HCCs, 1 JC); **Rlc. Little Toshie** (C. Beaufort x Rlc. Toshie Aoki), 1994, Nuuanu Orchids, 85 F1 and 93 total progey, 13 AOS awards (5 AMs, 8 HCCs); **C. Lana Coryell** (C. walkeriana x C. Beaufort), 1987, L. Farnsworth, 80 F1 and 162 total progeny, 11 AOS awards (6 AMs, 5 HCCs); **Rlc. Love Call** (Rlc. Waikiki Sunset x C. Beaufort), 1990, Dogashima, 65 F1 and 92 total progeny, 2 AOS awards (1 AM, 1 HCC).

C. Beaufort
'Harford's Elmwood 4N' AM/AOS
Nov 1991, NS 6.4 x 6.1 cm

Rth. Free Spirit
'Eric' AM/AOS
Mar 2013, NS 8.6 x 8.5 cm

Rlc. Little Toshie
'Gold Country' AM/AOS
Nov 1997, NS 9.2 x 9.5 cm

C. Lana Coryell
AM/AOS
Feb 2002, NS 6.4 x 6.4 cm

Rlc. Love Call
'Autumn Glow' AM/AOS
Oct 2002, NS 8.0 x 8.5 cm

Rlc. Mrs. J. Leemann (1902) (Rl. digbyana x C. dowiana), 1902, Maron, 169 F1 and 8595 total progeny, 1 AM/AOS award. Select major progeny (most progeny): **Rlc. Sofrano** (Rlc. Mrs. J. Leemann x C. Iridescens), 1917, Sanders [St. Albans], 5 F1 and 5882 total progeny, no AOS awards; **Rlc. Llewellyn** (Rlc. Minerva (1910) x C. Mrs. Medo), 1937, Manda, 26 F1 and 2250 total progeny, no AOS awards; **Rlc. Faye Miyamoto** (C. Amber Glow x Rlc. Llebanche), 1975, Miyamoto,43 F1 and 1202 total progeny, no awards; **Rlc. Xanthea** (The Baroness x Rlc. Sofrano), 1928, Charlesworth Ltd., 21 F1 and 4341 total progeny, no awards (pictures / paints not available, will select a major progeny as a representative. There are two candidates, Rlc. Xanthedo (Rlc. Xanthea x Mrs. Medo) and Rlc. Dorothy Drury-Lowe (Rlc. Xanthea x C. Lembera). The Rlc. Dorothy Drury-Lowe parent C. Lembera has unknown parentage [aka. No ID] and when back crossed with Rlc. Xanthea created Rlc. Jane Helton. The cross Rlc. Xanthedo was selected but it also had no pictures and only one major progeny Rlc. Xanthette); **Rlc. Xanthette** (Rlc. Midenette x Rlc. Xanthedo), 1948, L. Sherman Adams, 57 F1 and 2698 total progeny, 6 AOS awards (4 AMs, 1 HCC, 1 JC).

Rlc. Mrs. J. Leemann
'Natt's Delight' AM/AOS
Mar 2017, NS 19.0 x 14.5 cm

Rlc. Sofrano
AM/RHS
Oct 1920

Rlc. Llewellyn

Rlc. Faye Miyamoto

Rlc. Xanthette
'Krull-Smith' AM/AOS
Aug 1983, NS 15.0 cm

C. Triumphans (C. dowiana x C. rex), 1904, Maron, 84 F1 and 4315 total progeny, 2 AOS awards (1 AM, 1 HCC). Major progeny are: **C. Golden West** (C. Orion (1909) x C. Triumphans), 1936, Armacost, 5 F1 and 972 total progeny, no awards. No paintings or pictures available. Looking at progeny major F1 was **C. Los Angeles** with 967 total progeny, next generation was **Rlc. Cheah Bean-Kee** with 965 total progeny, next generation was **Rlc. Waianae Flare** with 955 total progeny, followed by **Rlc. Toshie Aoki** with 950 total progeny; **Rlc. Toshie Aoki** (Rlc. Faye Miyamoto x Rlc. Waianae Flare), 1980, Miyamoto, 224 F1 and 950 total progeny, 14 AOS awards (7 AMs, 6 HCCs, 1 JC); **C. Calizona** (C. Haroldiana x C. Triumphans), 1941, Armacost, 3F1 and 1430 total progeny, no awards. No paintings or pictures available. Looking at progeny major F1 was **C. Lee Langford** with 1138 total progeny**; C. Lee Langford** (C. Calizona x C. S. J. Bracey), 1948, Ozzella, 96 F1 and 1138 total progeny, no awards; **C. Pau Liilii** (C. loddigesii x C. Triumphans), 1944, Hirose, 5 F1 and 477 total progeny, no awards. No paintings or pictures available. Looking at progeny major F1 was **C. Mary Miller** with 472 total progeny, next generation was **Ctt. Tickety Boo** with 470 total progeny, followed by **Ctt. Kauai Starbright** with 455 total progeny; **Ctt. Kauai Starbright** (C. Flirtie x Ctt. Tickety Boo), 1982, Kodama, 135 F1 and 455 total progeny, 4 AOS awards (1 AM, 2 HCC, 1 CCM); **C. Kaumana** (C. Caprice x C. Triumphans), 1944, Hirose, 4 F1 and 1029 total progeny, no awards. Looking at progeny major F1 was **Rlc. Walter Abe** with 1025 total progeny, next generation was **Rlc. Waikiki Sunset** with 786 total progeny; **Rlc. Waikiki Sunset** (Rlc. Walter Abe x C. Waianae Sunset), 1966, Miyamoto, 67 F1 and 786 total progeny, 2 AM/AOS awards; **Rlc. Manu Akaka** (C. Triumphans x Rlc. Yellow Hammer), 1951, H. Yamamoto, 5 F1 and 497 total progeny, no awards. No paintings or pictures available. Looking at progeny major F1 was **Rth. Orange Nuggett** with 478 total progeny; **Rth. Orange Nuggett** (Rlc. Manu Akaka x Ryn. Daffodil), 1980, Miyamoto, 128 F1 and 478 total progeny, 2 HCC/AOS awards.

Rlc. Triumphans
'Summer Moon' AM/AOS
Jul 2012, NS 13.7 x 18.1 cm

Ctt. Kauai Starbright
'Vi' HCC/AOS
Nov 1986, NS 5.5 cm

Rlc. Toshie Aoki
'Pizazz' AM/AOS
Aug 2017, NS 14.2 x 13.5 cm

Rlc. Lee Langford

Rlc. Waikiki Sunset
'Brightest Orange' BM/JOGA

Rth. Orange Nuggett
'Kadaoka' HCC/AOS
Feb 1981, NS 7.8 cm

Additional Key Primary Crosses and Key F1 Progeny

C. Octave Doin (C. dowiana x C. mendelii), 1899, Maron, 98 F1 and 8557 total progeny, no AOS awards. Key progeny: **C. Tityus** (C. Enid (1898) x C. Octave Doin), 1912, Charlesworth Ltd., 169 F1 and 4726 total progeny, no AOS awards.

Rlc. Mrs. M. Gratrix (1899) (Rl. digbyana x C. cinnabarina), 1899, Veitch, 16 F1 and 3139 total progeny, no AOS awards (early large yellow without C. dowiana). Looking at major F1 progeny **Rlc. Cooksonii** (Rlc. Mrs. M. Gratrix (1899) x C. dowiana), 1909, Charlesworth Ltd., 9 F1 and 2573 total progeny but no photo or picture available, next generation has **Rlc. Tucuman** with 2564 total progeny; **Rlc. Tucuman** (Rlc. Cooksonii x C. Rhoda (1908)), 1917, Lacroze, 9 F1 and 2564 total progeny, no AOS awards.

C. Octave Doin
'Herbert Goodson' FCC/RHS
Oct 1906

C. Tityus
'A. McBean' FCC/RHS
Jan 1914

Rlc. Mrs. M. Gratrix
'Grandis' FCC/RHS
Dec 1900

Rlc. Tucuman
'Claygate Lodge' AM/RHS
Sep 1923

C. Iridescens (C. bicolor x C. wallisii), 1909, Hassall, 14 F1 and 8760 total progeny, no AOS awards. Key progeny: **Rlc. Sofrano** (Rlc. Mrs. J. Leemann x C. Iridescens), 1917, Sanders [St. Albans], 5 F1 and 5882 total progeny, no AOS awards.

C. Ophir (C. dowiana x C. xanthina), 1901, Veitch, 33 F1 and 8600 total progeny, no AOS awards. Key progeny: **Rlc. The Baroness** (Rlc. Mrs. J. Leemann x C. Ophir), 1913, Bruno Schroder, 46 F1 and 6434 total progeny, no AOS awards.

C. Iridescens
'Aurifera' AM/RHS
Sep 1914

Rlc. Sofrano
AM/RHS
Oct 1920

C. Ophir
AM/RHS
Oct 1901

Rlc. The Baroness
'Orchidhurst' FCC/RHS
Dec 1916

C. Myra (1895) (C. trianae x C. crispata), 1895, Veitch, 21 F1 and 2930 total progeny, no AOS awards. A breeding line that does NOT include C. dowiana. Key progeny: **C. Trimyra** (C. Myra (1895) x C. trianae), 1910, Lawrence, 5 F1 and 2873 total progeny, no AOS awards.

C. Empress Frederick (C. dowiana x C. mossiae), 1888, Veitch, 129 F1 and 11971 total progeny, no AOS awards. Key prodeny: **C. Marathon** (C. Empress Frederick x C. Psyche (1902)), 1908, Charlesworth Ltd., 41 F1 and 4702 total progeny, no AOS awards.

C. Myra (1895)
'Etoile d'Or' FCC/RHS
Mar 1899

C. Trimyra
FCC/RHS
Apr 1912

C. Empress Frederick
'Avia Clifton' AM/RHS
Oct 1913

C. Marathon
'Vesuvius' FCC/RHS
Jan 1909

C. Coronet (1902) (C. cinnabarina x C. harpophylla), 1902, Charlesworth Ltd., 34 F1 and 3921 total progeny, 3 AOS awards (2 AMs, 1 JC). A breeding line that does not include C. dowiana. Key progeny: **C. Elinor** (C. schroederae x C. Coronet (1902)), 1908, Charlesworth Ltd., 33 F1 and 3504 total progeny, 1 HCC/AOS award.

C. Golden Gem (C. intermedia x C. crispata), 1905, Unknown, 3 F1 and 1594 total progeny, no awards. No pictures or photos available. Next generation has **C. Golden Fleece** with 1591 total progeny; **C. Golden Fleece** (C. Golden Gem x C. dowiana), 1909, Sir George Holford, 6 F1 and 1591 total progeny, no AOS awards. Major F1 progeny: **C. Golden Gleam** (C. Elinor x C. Golden Fleece), 1934, Alexander, 7 F1 and 1585 total progeny, no awards. No pictures or photos available. Next generation F1, **Rlc. Golden Myth** (Rlc. Mithra x C. Golden Gleam), 1949, McDade, 48 F1 and 1566 total progeny, 2 HCC/AOS awards. No pictures or photos available. Next generation F1 **Rlc. Buttercup** with 1185 total progeny; **Rlc . Buttercup** (Rlc. Primate x Rlc. Golden Myth), 1961, Rivermont, 94 F1 and 1185 total progeny, 8 AOS awards (1 AM, 7 HCCs).

C. Coronet (1902)
'Harold Walker's Gift' AM/AOS
Apr 2001, NS 8.4 x 8.8 cm

C. Elinor
AM/RHS
Mar 1908

C. Golden Fleece
AM/RHS
Aug 1912

C. Buttercup
'Bozo' HCC/AOS
Feb 1972, NS 11.4 cm

C. G. S. Ball (C. schroederae x C. cinnabarina), 1900, Veitch, 68 F1 and 2035 total progeny, 1 CCC/AOS award. Key progeny: **C. Orange Gem (1929)** (C. Elinor x C. G. S. Ball), 1929, Alexander, 58 F1 and 919 total progeny, 1 HCC/AOS award.

C. Dominiana (1899) (C. dowiana x C. purpurata), 1899, Veitch, 76 F1 and 5341 total progeny, no AOS awards. Key progeny: **C. Anzac (1921)** (C. Marathon x C. Dominiana (1899)), Charlesworth Ltd., 305 F1 and 2712 total progeny, 2 AOS awards (1 AM, 1 CCM).

C. G. S. Ball

C. Orange Gem
'Delight'

C. Dominiana
'Southfield' FCC/RHS
Apr 1913

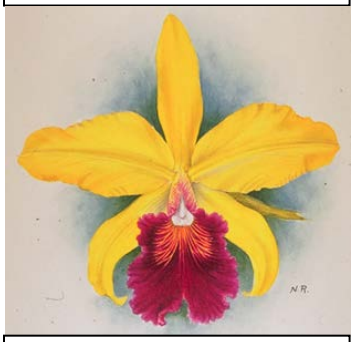
C. Anzac
'Orchidhurst' FCC/AOS
Jan 1967

C. Warnhamensis (1898) (C. cinnabarina x C. trianae), 1898, Lucas, 17 F1 and 2258 total progeny, no AOS awards. Key progeny: **C. Goldfinch** (C. Warnhamensis x C. dowiana), 1908, Sir George Holford, 7 F1 and 2238 total progeny, no AOS awards.

C. Warnhamensis (1898)
'Hypatia' AM/RHS
Feb 1899

C. Flirtie (C. forbesii x C. crispata), 1961, Miyamoto, 26 F1 and 590 total progeny, no awards. No pictures or photos available. Key progeny: **Ctt. Kauai Starbright** (C. Flirtie x Ctt. Tickety Boo), 1982, Kodama, 135 F1 and 455 total progeny, 4 AOS awards (1 AM, 2 HCC, 1 CCM).

Ctt. Wolteriana (Gur. aurantiaca x C. schroederae), 1909, Wolter, 28 F1 and 684 total progeny, 2 AOS awards (1 AM, 1 JC). Key progeny: **Rth. Bouton D'Or** (Ctt. Wolteriana x Rlc. Buttercup), 1968, E. J. Small, 136 F1 and 636 total progeny, 10 AOS awards (2 AMs, 5 HCCs, 3 CCMs).



C. Goldfinch
'Superba' AM/RHS
Feb 1909

Ctt. Wolteriana
'Supreme' AM/AOS
Feb 1967

Rth. Bouton D'Or
'Lewis' AM/AOS
Feb 1973, NS 9.5 cm

Ctt. Kauai Starbright
'Vi' HCC/AOS
Nov 1986, NS 5.5 cm

Additional Interesting Information

Of the approximately 410 crosses considered in this report (three sources plus a couple of my favorite grexes: R. Midgett, *Crippling – A Genetic issue in Yellow and Art-Shade Cattleyas*, Orchids, 2010 (6); C. T. Hackney, *American Cattleyas – Species and Outstanding Clones that Defined American Hybridizing*, 2004; AOS quality awardees as pictured in 2018 issues, to August, *Orchids*, Cattleya alliance, yellow / art shade color, to be reported on later) the top 20 Originators and number of crosses they had are (ranked by number of crosses in this report):

Originator	**# Grexes**	**# Grexes (-2018 Adwardee Grexes)**
Charlesworth Ltd.	46	44
Sanders [St. Albans]	27	20
Stewart Inc. (& Orchids)	18	13
Miyamoto	17	13
Veitch	17	14
Armacost	15	10
S. Low	12	10
Alberts/Merkel	10	2
Alexander	8	3
Black & Flory	8	5
Maron	8	7
Sir George Holford	8	6
F. Clarke	7	0
McBean's	7	6
H & R Nurseries	6	0
Jones & Scully	6	3
McDade	6	4
Rod McLellan Co.	6	2
Carter & Holmes	5	5
Hassall	5	3