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#### *About the Institute*

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

LIST OF CHARACTERS FOR THE ONCIDIINAE (ORCHIDACEAE) —Mike Wirth

1. Pseudobulbs
  1. absent
  2. reduced
  3. prominent
2. Pseudobulb cross-section shape
  4. round
  5. lenticular
  6. flat
  7. NC- no pseudobulbs
3. Pseudobulb gross shape
  8. squatty
  9. average
  10. long
  11. NC- no bulbs
4. Rhizome
  12. absent
  13. pronounced
  14. NC
5. Growth pattern
  15. sympodial only
  16. monopodial habit present
6. Sheathing leaves
  17. present when growth is mature
  18. absent " " "
  19. NC
7. Apical leaves
  20. large, foliaceous
  21. absent or much reduced
  22. NC
8. Leaf cross-section
  23. thin N = 4
  24. somewhat thick, fleshy
  25. very thick (sect. *Miltoniastrum*) K = 1
  26. terete
  27. NC
9. Leaf flattening
  28. dorsoventral
  29. lateral
  30. NC

10. Distribution of red pigment in plant
  31. no pigment
  32. diffuse
  33. patterned
  34. NC
11. Inflorescence origin
  35. mature growth
  36. immature growth
  37. NC
12. Inflorescence duration
  38. producing flowers for 1 season only
  39. producing flowers for more than one season, by extended growth
13. Inflorescence form
  40. 1-flowered
  41. 2-3 flowered
  42. racemose to barely paniculate
  43. strongly paniculate
14. Reduced, sigmatostalicoid side branches
  44. absent
  45. "pseudo-present"
  46. present
  47. NC
15. Inflorescence position
  48. axillary
  49. supra-axillary
  50. NC
16. Inflorescence cross-section
  51. round
  52. angled
17. Flower sequence
  53. indeterminate
  54. determinate
  55. NC
18. Ratio of bract/pedicellate ovary
  56. under  $1/3$  N = 3
  57.  $1/3$ -- $2/3$
  58. over  $2/3$  K = 0
  59. NC
19. ovary ornamentation
  60. none
  61. warty-echinate
  62. hairs
20. Ovary wings
  63. absent
  64. present

21. Floral bract gross shape  
65. base ovate  
66. base cordate  
67. NC
22. Floral bract number  
68. 1  
69. 2  
70. NC
- 
23. Sepal position II  
1. spreading-reflexed  
2. close around column
24. Sepal keels  
3. absent  
4. slight N = 3  
5. pronounced K = 0  
6. NC
25. Dorsal sepal concavity  
7. concave  
8. flat
26. Dorsal sepal shape  
9. ovate  
10. elliptic  
11. obovate-spatulate  
12. NC
27. Dorsal sepal--lateral sepal relationship  
13. subsimilar in size N = 3  
14. d.s. more or less different in size K = 0  
15. d.s. very different  
16. NC
28. Sepal apices  
17. acute N = 3  
18. sub-acute K = 0  
19. blunt to emarginate
29. Lateral sepal gross shape  
20. ovate  
21. elliptic  
22. obovate-spatulate  
23. NC - fusion
30. Lateral sepal basal connation  
24. free to more or less connate (incl. lip adnation)  
25. connate less than 1/3 length  
26. connate over 1/2
31. Lateral sepal adnation to lip  
27. free  
28. more or less adnate  
29. strongly adnate

32. Lateral sepal basal concavity- "u-turn"  
30. absent  
31. present  
32. NC
33. Dorsal sepal basal auricles  
33. absent  
34. present  
35. NC - fusion
34. Petal shape  
36. ovate  
37. elliptic  
38. obovate-spatulate  
39. NC - fusion
35. Petal apex  
40. acute N = 3  
41. subacute K = 0  
42. blunt-emarginate
36. Petal margin 1  
43. crisped  
44. not crisped  
45. NC fusion
37. Petal margin 2  
46. dentate  
47. entire  
48. NC fusion
38. Petal position  
49. close  
50. flat (90 degrees)  
51. reflexed
39. Petal: width/length  
52. 0-.29  
53. .30-.61 N = 4  
54. .62-.84 K = 1  
55. .85-over  
56. NC fusion
40. Petal keels  
57. absent  
58. present, slight  
59. pronounced
41. Petal-column adnation  
60. absent  
61. present

42. Petal-sepal adnation  
62. absent  
63. present, slight  
64. pronounced
43. Lip abortion  
65. all normal  
66. some aborted  
67. NC - less than 2 flrs in inflorescence
44. Lip apex.  
68. emarginate  
69. more or less truncate  
70. acute
- 
45. Lip margin 1 III  
1. flat  
2. crisped
46. Lip margin 2  
3. entire  
4. dentate
47. Lip shape  
5. simple  
6. three-lobed
48. Ratio L1:L2 in 3-lobed lips  
7. L1 greater than L2 N = 3  
8. L1 = L2 K = 0  
9. L1 less than L2  
10. NC-simple lip
49. Ratio of D1:D2 in 3-lobed lips  
11. D1 greater than D2 N = 3  
12. D1 = D2 K = 0  
13. D1 less than D2  
14. NC- simple lip
50. Lip: width/length  
15. 0-.56 N = 3  
16. .57-1.16 K = 0  
17. 1.17-over  
18. NC- length undeterminable

51. Lip basal pouch  
19. present  
20. Absent
52. Lip "heel"  
21. absent  
22. present  
23. NC - lip and sepals strongly fused
53. Lip hair- dorsal  
24. absent  
25. generally distributed  
26. restricted  
27. restricted mostly to base or claw
54. Lip secretion  
28. present  
29. absent
55. Lip- type of secretion  
30. glands present  
31. no glands; lateral lobes and/or isthmus secretory  
32. no glands; basal portion secretory  
33. NC- no secretion
56. Simple lip shape  
34. ovate  
35. elliptic-round  
36. obovate-spatulate  
37. unguiculate  
38. NC- 3-lobed
57. Lip-column angle  
39. parallel to ca. 5 degrees           N = 5  
40. 6-36 degrees                       K = 2  
41. 37-76  
42. 77-106  
43. 107-over  
44. NC- not measurable
58. Lip-column adnation  
45. basal, flimsy  
46. -----                               N = 7  
47. basal, solid                         K = 4  
48. -----  
49. lateral  
50. laterocentral  
51. central
59. Ratio of callus/lip length  
52. up to .22                             N = 3  
53. .23-.47                               K = 0  
54. .48-over  
55. NC- no callus  
56. NC-impossible to determine lengths

- 60. Lip profile
  - 57. straight
  - 58. bending off gradually
  - 59. bending off sharply
  
- 61. Lip-stigma relationship
  - 60. Stigma unobstructed
  - 61. stigma partially obstructed
  - 62. stigma obstructed
  
- 62. Callus
  - 63. present
  - 64. absent
  
- 63. Isolated tubercles on lip
  - 65. present
  - 66. absent
  
- 64. Callus secretory area
  - 67. present
  - 68. absent
  - 69. NC- no callus
  
- 65. Callus mounds
  - 70. absent

III

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- 1. one
  - 2. two
  - 3. NC, no callus

IV
  
- 66. Callus hair
  - 4. absent
  - 5. present
  - 6. NC, no callus
  
- 67. Callus hair amount
  - 7. slight
  - 8. extensive
  - 9. NC, no callus
  - 10. NC, no hair
  
- 68. Callus mound surface
  - 11. deeply concave
  - 12. flat, normal, or bipartite longitudinally, but not bucket-shaped
  - 13. NC, no callus
  - 14. NC, no mounds
  
- 69. Callus tubercles
  - 15. absent
  - 16. present

- 70. Callus- lateral plate-like projections (Odm, maculatum, Ornitho)
  - 18. present
  - 19. absent
  - 20. NC, no callus
- 71. Isolated basal horn in callus
  - 21. present
  - 22. absent
  - 23. NC, no callus
- 72. Transverse, more or less basal process, forming "nectary"
  - 24. present
  - 25. absent
  - 26. NC, no callus
- 73. Longitudinal callus structures 1
  - 27. present
  - 28. absent
  - 29. NC
- 74. Longitudinal structures 2
  - 30. low
  - 31. prominent, high
  - 32. NC, no callus
  - 33. NC, no longitudinal structures
- 75. Longitudinal modifications into Keels, horns
  - 34. present
  - 35. absent
  - 36. NC, no callus
  - 37. NC, no longitudinal structures
- 76. Column curvature
  - 38. more or less straight to arched
  - 39. cygmoid
  - 40. NC
- 77. True column wings
  - 41. absent
  - 42. rudimentary
  - 43. pronounced
- 78. Column hair
  - 44. absent
  - 45. latero-ventral
  - 46. general



90. Stigma margin hairs  
9. present  
10. absent
91. Stigma base ligule  
11. absent  
12. present, directed forward  
13. present, directed backward or out
92. Stigma proximal recession  
14. absent  
15. slight  
16. great  
N = 3  
K = 0
93. Stigma basal horns  
17. present  
18. absent
94. Stigma basal horns - 2  
19. Miltoniastroid  
20. systelogglossoid  
21. NC, no horns
95. Anther closure  
22. absent  
23. present
96. Anther structure  
24. massive  
25. average  
26. thin, flexible (Dichaea)
97. Anther surface  
27. smooth  
28. ornamented
98. Clinandrium angle  
29. under 72 degrees  
30. 73-101  
31. 102-122  
32. 123-over  
33. NC- not measurable  
N = 4  
K = 1
99. Pollinia type  
34. 2, entire  
35. 2, cleft  
36. 4, appressed  
37. 4, independent
100. Pollinia shape in 2 pollinia forms  
38. obovate-round  
39. round-round  
40. flat  
41. NC, 4 pollinia

101. Caudicle  
42. small, inconspicuous  
43. large, intact, as long as stipe  
44. large, bifurcate
102. Stipe proportions  
45. elongate  
46. squatty  
47. NC
103. Stipe shape  
48. ovate  
49. elliptic  
50. obovate-spatulate-bispatulate  
51. NC
104. Stipe apex  
52. acute  
53. truncate  
54. emarginate to lobed  
55. NC
105. Stipe modifications  
56. flat to cupped and rolled  
57. flat, bending sharply (Miltoniastroid)  
58. Distinct pocket or bulge below pollinia (Brassia)  
59. keeled  
60. terete  
61. NC
106. Stipe-viscidium articulation  
62. Oncidioid  
63. Maxillarioid  
64. NC
107. Non-oncidioid (Maxillarioid) articulation  
65. continuous  
66. non-continuous  
67. NC, no stipe  
68. NC, oncidioid
108. Rostellum pocket  
69. absent  
70. shallow
- 
1. deep, free  
2. deep, covered
109. Rostellum juncture  
3. vague  
4. "u" or "v" shaped  
5. hippocrepiform
- V  
VI

- 110. Rostellum edge
  - 6. protuberant
  - 7. truncate
  - 8. concave
  - 9. more or less non-existent (Systeloglossum)
  
- 111. Rostellum thickening
  - 10. absent
  - 11. present
  
- 112. Rostellum gross shape
  - 12. very small, inconspicuous
  - 13. average
  - 14. long
  - 15. Miltoniastroid
  - 16. Dichaeoid
  
- 113. Yellow flower colour
  - 17. absent
  - 18. slight
  - 19. prominent
  
- 114. Brown flower colour
  - 20. absent
  - 21. slight
  - 22. prominent
  
- 115. Pink and red colours
  - 23. absent
  - 24. slight
  - 25. prominent
  
- 116. White flower colour
  - 26. absent
  - 27. slight
  - 28. prominent
  
- 117. Green flower colour
  - 29. absent
  - 30. slight
  - 31. prominent