

Cytoscape-ClueGO app(free) **이|용** Enrichment GO or KEGG Network

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★ 주의

Cytoscape 3.6.0 version 이상 설치 (3.7.0 권장)
JAVA8 64bit 설치

<http://www.cytoscape.org/>



<https://github.com/cytoscape/cytoscape/releases/3.7.0/>



<http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html>
*회원가입/로그인필요

[Overview](#)
[Downloads](#)
[Documentation](#)
[Community](#)
[Technologies](#)
[Training](#)

Java SE Runtime Environment 8 Downloads

Do you want to run Java™ programs, or do you want to develop Java programs? If you want to run Java programs, but not develop them, download the Java Runtime Environment, or JRE™.

If you want to develop applications for Java, download the Java Development Kit, or JDK™. The JDK includes the JRE, so you do not have to download both separately.

JRE 8u121 Checksum

Java SE Runtime Environment 8u121

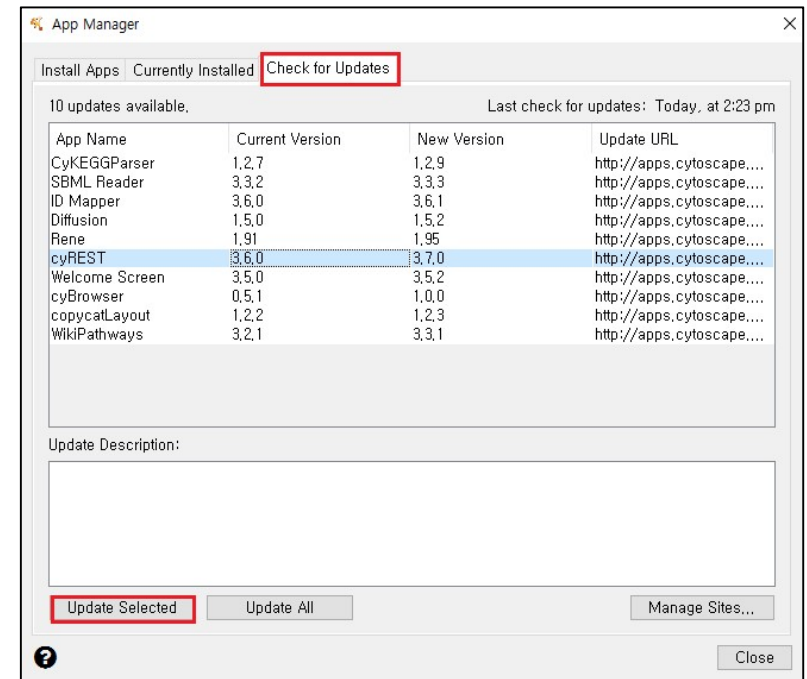
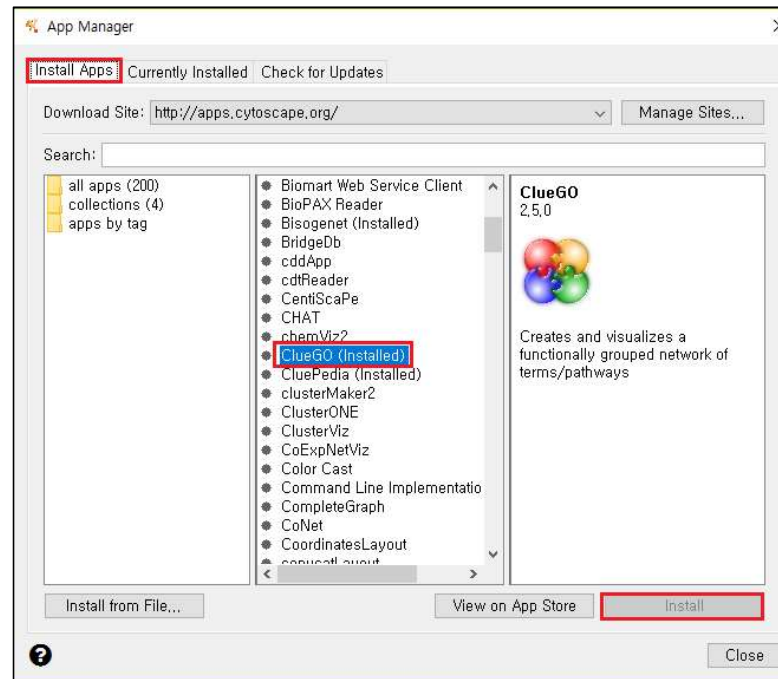
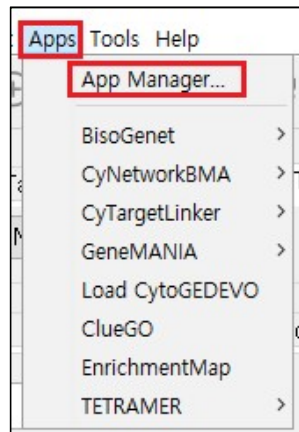
You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

☒ Accept License Agreement
 ☐ Decline License Agreement

| Product / File Description | File Size | Download |
|-----------------------------|-----------|--------------------------------------------------|
| Linux x86 | 56.92 MB | jre-8u121-linux-i586.rpm |
| Linux x86 | 72.76 MB | jre-8u121-linux-i586.tar.gz |
| Linux x64 | 54.39 MB | jre-8u121-linux-x64.rpm |
| Linux x64 | 70.26 MB | jre-8u121-linux-x64.tar.gz |
| Mac OS X | 62.28 MB | jre-8u121-macosx-x64.dmg |
| Mac OS X | 53.91 MB | jre-8u121-macosx-x64.tar.gz |
| Solaris SPARC 64-bit | 52.05 MB | jre-8u121-solaris-sparcv9.tar.gz |
| Solaris x86 | 49.9 MB | jre-8u121-solaris-x64.tar.gz |
| Windows x86 Online | 0.7 MB | jre-8u121-windows-i586-iftw.exe |
| Windows x86 Offline (32bit) | 53.81 MB | jre-8u121-windows-i586.exe |
| Windows x86 | 59.17 MB | jre-8u121-windows-i586.tar.gz |
| Windows x64 Offline (64bit) | 61.18 MB | jre-8u121-windows-x64.exe |
| Windows x64 | 62.66 MB | jre-8u121-windows-x64.tar.gz |

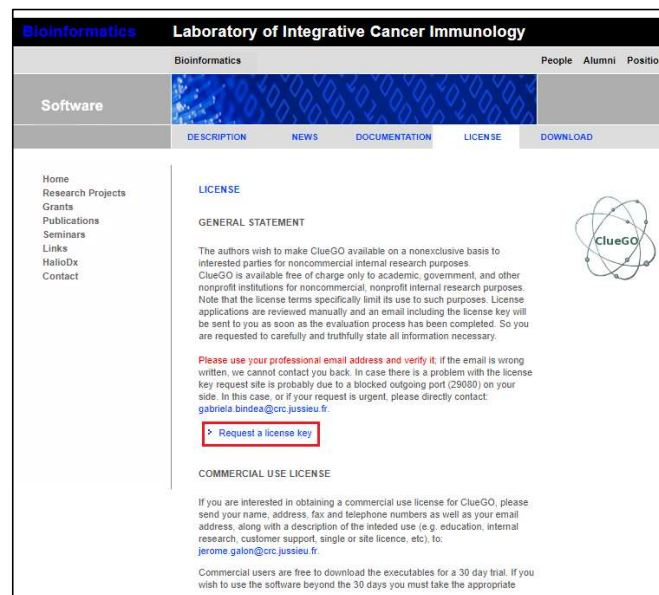
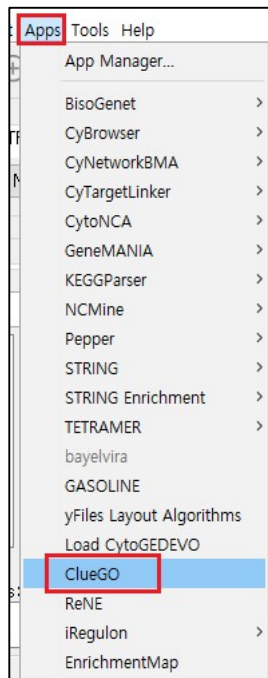
★ 설치

1. Cytoscape 실행
2. 우측상단의 [Apps] > [App Manager]
3. [Install Apps]에서 “ClueGO (Installed)” 설치
 - * 일상적으로 사용하다가 오류가 발생된다면 [Check for Updates]에서 “ClueGO “ 선택업데이트



★ 설치

1. ClueGO가 설치되면 Apps 하위 메뉴에 ClueGO가 추가되어져 있음.
2. [ClueGO]클릭하면 license를 받으라는 메시지가 나옴.
3. [Get-license] 클릭
4. ClueGO license site (<http://www.ici.upmc.fr/cluego/cluegoLicense.shtml>)에서 'Request a license key'를 눌러 license를 신청.
License는 수 일 내에 이메일로 오며 license key를 [Re-license]를 눌러 입력하면 사용가능



Request License for ClueGOPlugin 1.x, 2.x

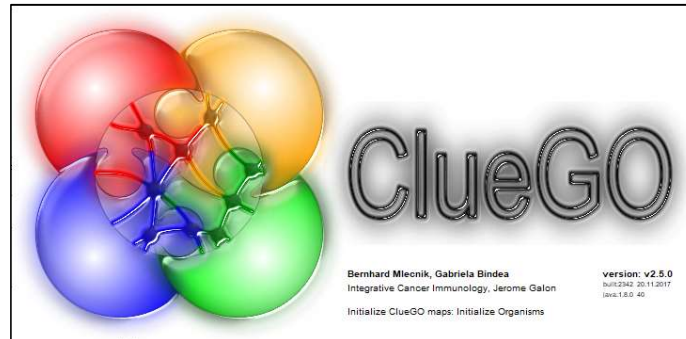
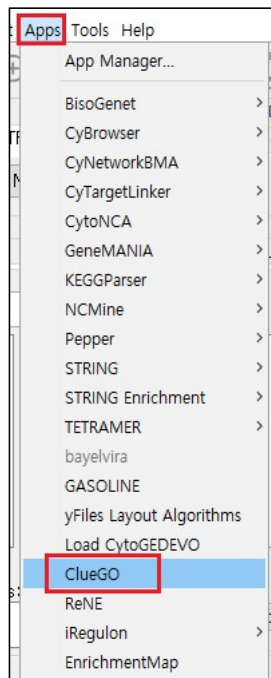
Please fill-in this form. The magenta framed fields are required.

i This information allows us to estimate the number of ClueGO users and to know in which institutions our tool is used. The indicated research field will help us to direct our further development of the tool.

| | |
|------------------|-----------------------------------|
| First name: | <input type="text"/> |
| Last name: | <input type="text"/> |
| Title: | <input type="text"/> |
| Department: | <input type="text"/> |
| Institution: | <input type="text"/> |
| Street: | <input type="text"/> |
| Street2: | <input type="text"/> |
| City(incl. Zip): | <input type="text"/> |
| Country: | <input type="text" value="None"/> |
| Email: | <input type="text"/> |
| Phone: | <input type="text"/> |
| Fax: | <input type="text"/> |
| URL: | <input type="text"/> |
| Note: | <input type="text"/> |

★ 분석순서

1. [App] > [ClueGO]



★ 분석순서

1. 종 선택
2. Gene symbol list 붙여넣기 (300~400개 권장)
3. GO and/or KEGG 선택
4. Start

※ 결과에 따라 파란색박스의 옵션 조절 후에 재분석

- 결과 네트워크가 복잡할 경우 이곳을 check!
유사한 Term은 Fusion시키는 기능.
- GO Tree Interval – GO interaction level 범위를 설정
네트워크가 복잡하면 범위를 좁히고
네트워크가 심플하면 범위를 넓힘.
- GO Term/Pathway Selection – Term에 관여하는 Gene의 수, %를 설정
네트워크가 복잡하면 수를 높이고
네트워크가 심플하면 수를 줄임.
- 혹은 단순히 'Bar' 이동시켜 조절 가능

Advanced Term/Pathway Selection Options

GO Tree Interval: 4 (Min Level: 10, Max Level: ?)

GO Term/Pathway Selection (#/% Genes): Cluster #1: 2 (Min #Genes: 4,000, %Genes: ?)

GO Term/Pathway Network Connectivity (Kappa Score): Low Medium High Score: 0.4

ClueGO v2.5.0 + CluePedia v1.5.0

Analysis Mode: ☒ ClueGO: Functions ☐ CluePedia: Genes/miRNAs

Load Marker List(s): ☒ Homo Sapiens [9606] ☐ # Automatic #

☒ File ☐ Network

Shape: Ellipse

Visual Style: ☒ Groups ☐ Significance

ClueGO Settings

Ontologies/Pathways

| Type | Name | # | Date | Shape |
|-------------------------------------|----------|----------------------|-------|----------|
| <input checked="" type="checkbox"/> | GO | BiologicalProcess... | 15... | 20.11... |
| <input checked="" type="checkbox"/> | GO | CellularCompone... | 19... | 20.11... |
| <input checked="" type="checkbox"/> | GO | ImmuneSystemPr... | 11... | 20.11... |
| <input checked="" type="checkbox"/> | GO | MolecularFuncio... | 46... | 20.11... |
| <input type="checkbox"/> | INTERPRO | ProteinDomains | 38... | 20.11... |
| <input checked="" type="checkbox"/> | KEGG | KEGG | 31... | 20.11... |

☒ Update Ontologies

☒ Download New Organisms or Data

Network Specificity: Global Medium Detailed

☒ Use GO Term Fusion

☐ Show only Pathways with pV ≤ 0.05000

☒ Advanced Term/Pathway Selection Options

☐ Statistical Options

☐ Grouping Options

☐ CluePedia Options

Preferred Layout: Select Layout: yFiles Organic Layout Apply

ClueGO Functional Analysis: Start

• 원하는 종이 선택사항에 없다면
이곳을 클릭하여 종 찾아 다운로드

biogen

★ 분석순서

6. ClueGO Result Info. 확인

7. 네트워크 결과 확인

※ node(원) 클릭 선택하여 이동 시킬 수 있음.

ClueGO Result Information

All results were created with ClueGO v2.5.0

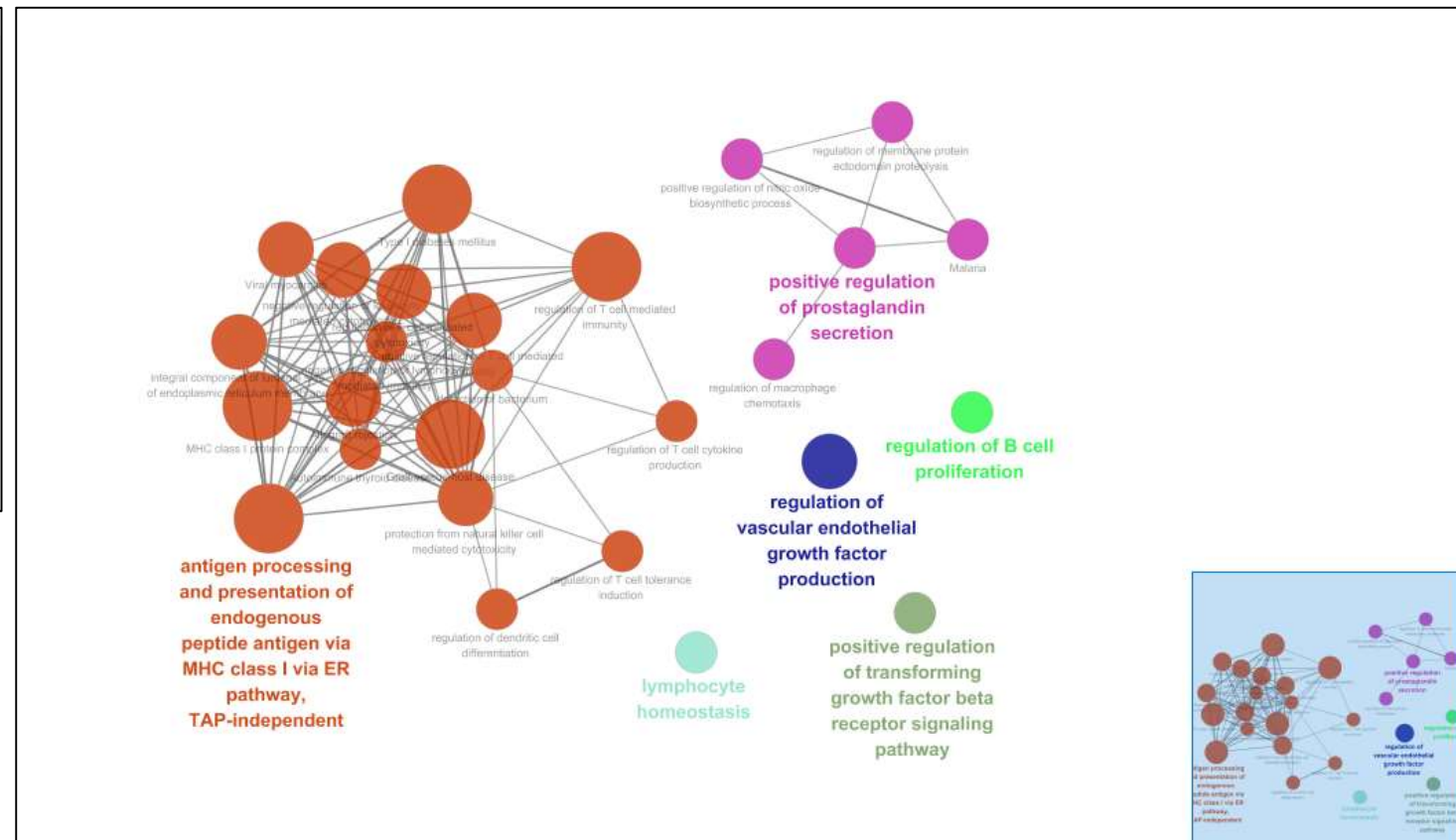
Organism analyzed: Homo Sapiens [9606]
 Identifier types used: [SymbolID]
 Evidence codes used: [All]
 #Genes in KEGG_20.11.2017 : 7282
 #Genes in GO_ImmuneSystemProcess-EBI-QuickGO-GOA_20.11.2017_00h00 : 3070
 #Genes in GO_MolecularFunction-EBI-QuickGO-GOA_20.11.2017_00h00 : 17293
 #Genes in GO_CellularComponent-EBI-QuickGO-GOA_20.11.2017_00h00 : 18313
 #Genes in GO_BiologicalProcess-EBI-QuickGO-GOA_20.11.2017_00h00 : 17268
 #All unique genes in selected ontologies: 19339 (reference set for hypergeometric test)
 #Genes from Cluster#1: unique uploaded ids 83 -> corresponding genes 77, with 6 (7.79%) missing -> 71 recognized by ClueGO.
 -> To improve the % of found genes, verify gene identifiers, download new available ClueGO conversion files or add/request additional files.
 #Genes with functional annotations in all selected Ontologies from Cluster#1: 68 (95.77%) -> 3 (4.23%) are not functionally annotated in any selected Ontology!
 -> To improve the % of annotated genes, choose additional ontologies or define less restrictive selection criteria.

#Genes from all Clusters associated to representative Terms and Pathways (after applying selection criteria): 24 (33.8%)

KappaScore Grouping:
 Iteration: 0 with 6 groups
 Final KappaScore groups = 6
 # Terms not grouped = 0

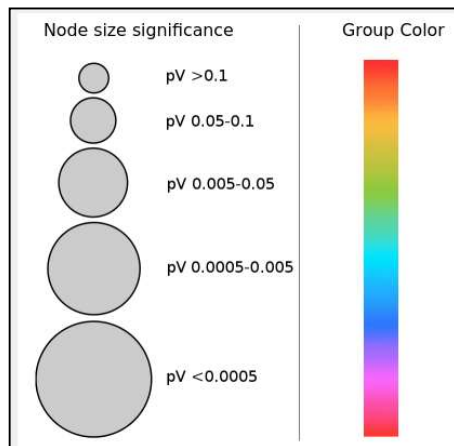
Merge redundant groups with >50.0% overlap
 Final group size after merging: 6
 #GO All Terms Specific for Cluster #1: 27
 #GO Terms: 27
 #GO Term Connections: 58

확인

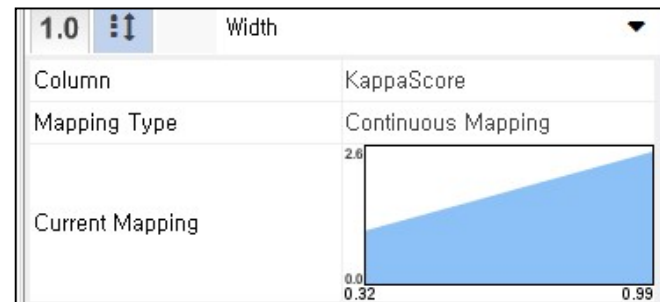


✂ ClueGO index

Node style



Edge style



None

Target Arrow Shape

| | |
|----------------------|------------------|
| Column | Regulates Target |
| Mapping Type | Discrete Mapping |
| NEGATIVELY_REGULATES | T |
| POSITIVELY_REGULATES | Arrow |
| REGULATES | Diamond |
| activation | Arrow |
| association | Circle |
| inhibition | T |

★ 분석순서

8. Table Panel- 'ClueGO Results' sheet에서 결과 확인
9. 아래의 붉은색 아이콘 두개를 클릭하여 결과엑셀파일, Cluster이미지 저장

Table Panel

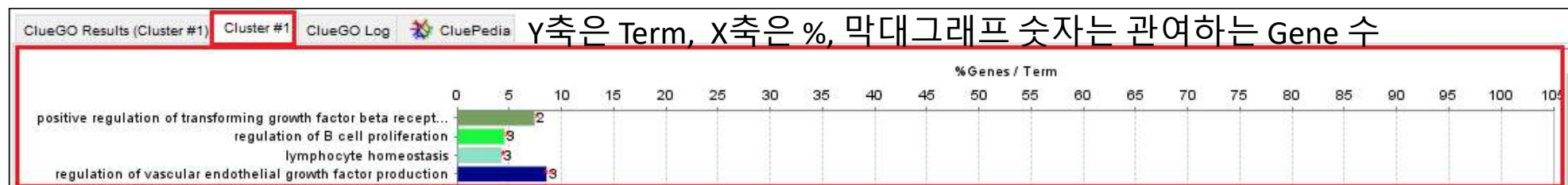
Results for Analysis0

ClueGO Results (Cluster #1) Cluster #1 ClueGO Log CluePedia

Hide Labels Label

| GOID | GO Term | Ontology Source | Term P | Selection | GeneID | Sym |
|-------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------|---------|-------------------------------------|-----------|---------|
| <input checked="" type="checkbox"/> | GO:003... positive regulation of transforming growth factor beta receptor signaling pathway | GO_BiologicalProcess-EBI-Q... | 4.0 E-3 | <input type="checkbox"/> | 100131827 | ZNF... |
| <input checked="" type="checkbox"/> | GO:003... regulation of B cell proliferation | GO_BiologicalProcess-EBI-Q... | 1.6 E-3 | <input type="checkbox"/> | 100506084 | ARL... |
| <input checked="" type="checkbox"/> | GO:000... lymphocyte homeostasis | GO_BiologicalProcess-EBI-Q... | 2.0 E-3 | <input type="checkbox"/> | 100820829 | MYZ... |
| <input checked="" type="checkbox"/> | GO:001... regulation of vascular endothelial growth factor production | GO_BiologicalProcess-EBI-Q... | 2.5 E-4 | <input checked="" type="checkbox"/> | 1028 | CDK... |
| <input type="checkbox"/> | KEGG... Malaria | KEGG_20.11.2017 | 1.2 E-2 | <input checked="" type="checkbox"/> | 10288 | LILR... |
| <input type="checkbox"/> | GO:004... positive regulation of nitric oxide biosynthetic process | GO_BiologicalProcess-EBI-Q... | 1.2 E-2 | <input checked="" type="checkbox"/> | 10755 | GIPC... |
| <input type="checkbox"/> | GO:005... regulation of membrane protein ectodomain proteolysis | GO_BiologicalProcess-EBI-Q... | 2.9 E-3 | <input type="checkbox"/> | 10990 | LILR... |
| <input type="checkbox"/> | GO:001... regulation of macrophage chemotaxis | GO_BiologicalProcess-EBI-Q... | 3.7 E-3 | <input checked="" type="checkbox"/> | 124976 | SPN... |
| <input checked="" type="checkbox"/> | GO:003... positive regulation of prostaglandin secretion | GO_BiologicalProcess-EBI-Q... | 1.0 E-3 | <input type="checkbox"/> | 135892 | TRIM... |
| <input type="checkbox"/> | KEGG... Type I diabetes mellitus | KEGG_20.11.2017 | 1.5 E-5 | <input type="checkbox"/> | 1476 | CST... |
| <input type="checkbox"/> | KEGG... Autoimmune thyroid disease | KEGG_20.11.2017 | 8.5 E-4 | <input type="checkbox"/> | 1628 | DBP... |
| <input type="checkbox"/> | KEGG... Allograft rejection | KEGG_20.11.2017 | 3.2 E-4 | <input type="checkbox"/> | 163782 | KAN... |

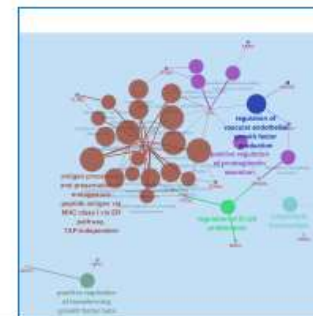
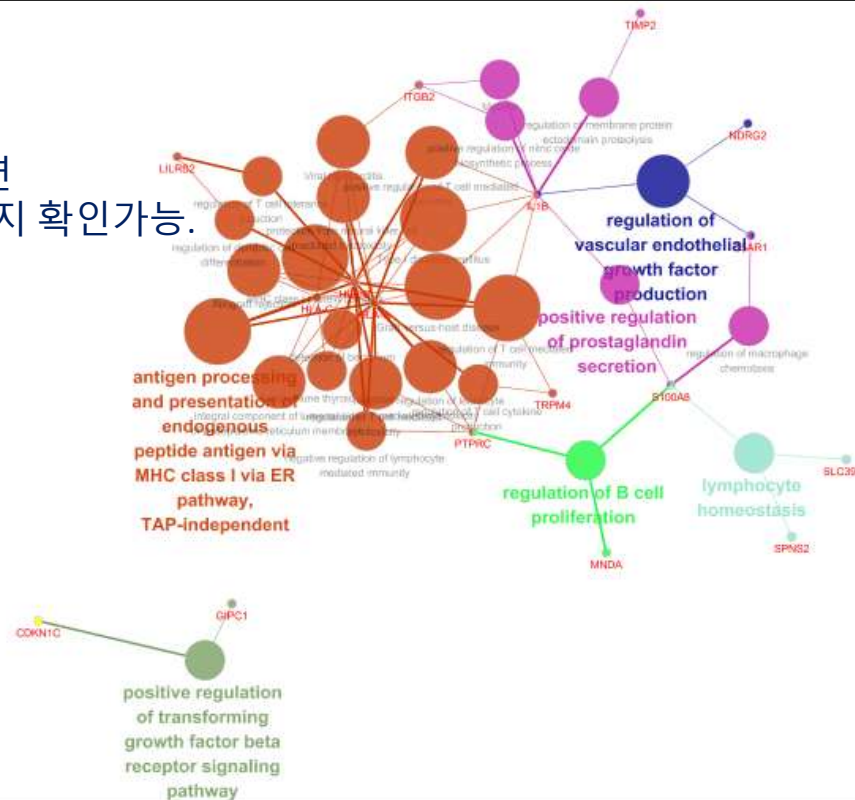
Node Table Edge Table Network Table ClueGO+CluePedia



★ 분석순서

10. 'CluePedia' sheet에서 붉은색 아이콘을 클릭하면 node(원) 하나하나에 관여하는 gene network까지 확인가능.

단, 'CluePedia' App을 추가로 설치해야 함.



Results for Analysis0

Table Panel

Results for Analysis0

ClueGO Results (Cluster #1) Cluster #1 ClueGO Log **CluePedia**

Gene/Interaction Enrichment Options

Edge Link Files

- ☒ CluePedia_STRING-ACTIONS_v10.5_9606_20.11.2017.txt.gz
- ☐ miRanda-miRNAs-v5-2012-07-19.txt.gz
- ☐ mirTarBase.validated.miRNAs_15.06.2016.txt
- ☐ mirecords.umn.edu.validated.miRNAs.2010-11-25.txt.gz

Undirected Edges + -

Directed Edges

| Edge Type | Score | Color |
|----------------------------------------------------------------|--------|--------|
| <input type="checkbox"/> activation_v10.5_20.11.2... | 0.0000 | Green |
| <input type="checkbox"/> binding_v10.5_20.11.2017 | 0.0000 | Blue |
| <input type="checkbox"/> catalysis_v10.5_20.11.20... | 0.0000 | Purple |
| <input checked="" type="checkbox"/> expression_v10.5_20.11.... | 0.0000 | Yellow |

Enrich Add Remove Up...

- [illegible]

★ 이미지저장방법

2. [File] > [Export]> [Network to Image]
3. PDF 파일형식으로 저장하는 것을 권장한다. (확대를 하여도 이미지가 깨지지 않음.)
4. 저장위치와 파일명을 지정하여 저장한다.

