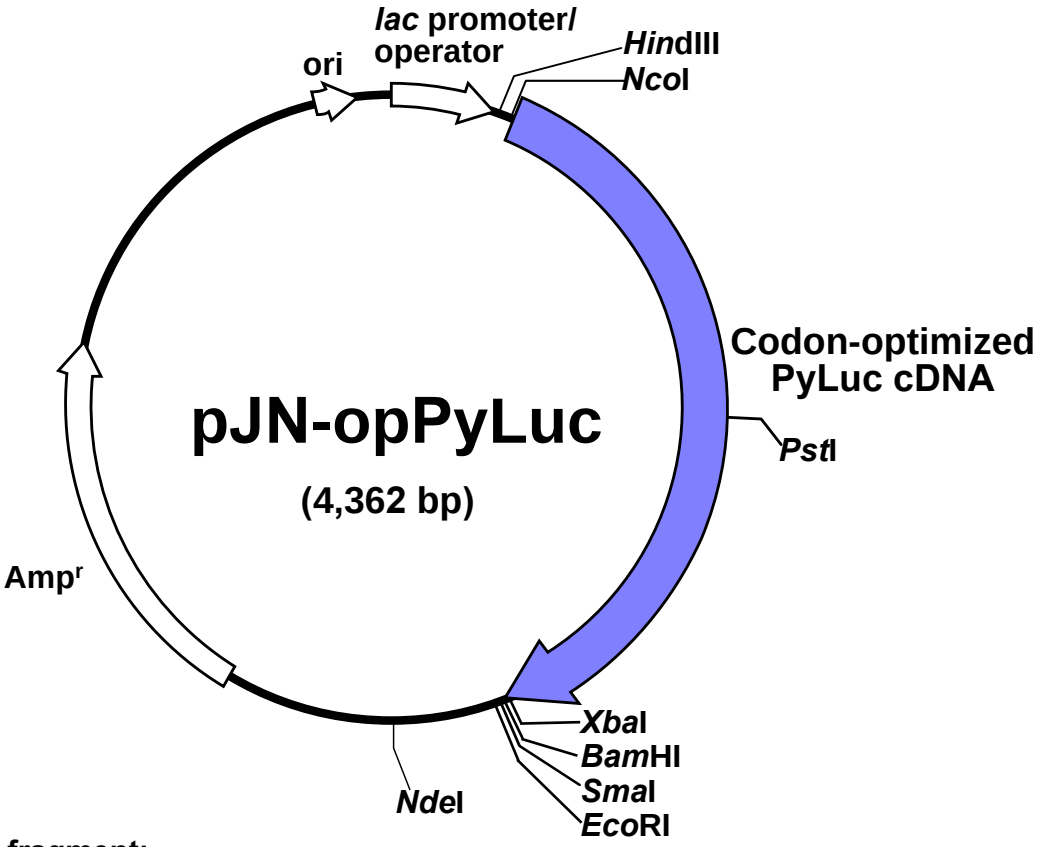
pJN-opPyLuc	
Cat. No.	P-005
Gene/Insert name:	Codon-optimized firefly luciferase of *Photinus pyralis* (opPyLuc)
Vector backbone:	pUC-JN
Vector type:	*E. coli*
Backbone size w/o insert (bp):	2,680
Bacterial resistance:	Ampicillin
Growth strain:	JM83
Growth temperature (ºC):	37
Growth instructions:	pJN-opPyLuc is resistant to ampicillin (50 µg/mL)
High or low copy:	High copy
Vector map:	pJN-opPyLuc
Coding sequence:	Nucleotide sequence & Amino acid sequence
Plasmid sequence:	pJN-opPyLuc (4,362 bp)
Restriction enzyme list:	Restriction enzyme sites of pJN-opPyLuc
GenBank Accession No.:	LC006854
Size:	10 µg
Constituents:	10 mM Tris-HCl (pH 7.6)－1 mM EDTA
Terms and Licenses:	MTA
Laboratory Reagent For Research Use Only	

Firefly Luciferase (*Photinus pyralis*), PyLuc

Cat. No. P-005

Name: pJN-opPyLuc
Insert: Codon-optimized firefly luciferase of *Photinus* (PyLuc) cDNA
Vector: pUC-JN (pUC9 derivative)



- **DNA fragment:**

```
                    M    E    D    A   - - -   S    K    L   ***
aagctt......cacc ATG-GAG-GAC-GCC-.......-AGC-AAG-CTG-TAA tctaga
HindIII      (Kozak)                                      XbaI
```

- **Feature for pJN-opPyLuc:**

Residue	Sourse	Comments
1-245	1-245	pUC-JN backbone (pUC9 derivative)
1-230	1-230	lac promoter/operator
275-1,924	1-1,650	Codon-optimized PyLuc ORF
1,928-4,362	294-2,728	pUC-JN backbone (pUC9 derivative)
4,189	2,555	ori: Origin of replication
2,561-3,421	927-1,787	Amp^r: Ampicillin resistance gene

Ref.
1) PyLuc amino acid seq. & cDNA seq.: GenBank Accession No. M15077
de Wet, J.R. *et al. Mol. Cell. Biol.* (1987) 7: 725-737.

2) Codon-optimized PyLuc DNA seq.: GenBank Accession No. LC006854
Inouye, S. et al. *Protein Expr. Purif.* (2015) 109: 47-54

Gene coding region (ORF: Codon-optimized PyLuc)

Nucleotide sequence

AAGCTTGGCAATCCGGTACTGTTGGTAAAGCCACC**ATG**GAGGACGCCAAGAACATCAAGAAGGGCCCCGC
CCCCTTTTACCCCCTGGAGGACGGCACCGCCGGCGAGCAGCTGCACAAGGCCATGAAGAGATACGCCCTG
GTCCCCGGCACCATCGCCTTTACCGACGCCCACATCGAGGTCAACATCACCTACGCCGAGTACTTTGAGA
TGAGCGTCAGACTGGCCGAGGCCATGAAGAGATACGGCCTGAACACCAACCACAGAATCGTCGTGTGCAG
CGAGAACAGCCTCCAGTTTTTTATGCCCGTCCTGGGCGCCCTGTTTATCGGCGTCGCCGTCGCCCCCGCC
AACGACATCTACAACGAGAGAGAGCTGCTGAACAGCATGAACATCAGCCAGCCCACCGTCGTCTTTGTCA
GCAAGAAGGGCCTCCAGAAGATCCTGAACGTCCAGAAGAAGCTGCCCATCATCCAGAAGATCATCATCAT
GGACAGCAAGACCGACTACCAGGGCTTTCAGAGCATGTACACCTTTGTCACCAGCCACCTGCCCCCCGGC
TTTAACGAGTACGACTTTGTCCCCGAGAGCTTTGACAGAGACAAGACCATCGCCCTGATCATGAACAGCA
GCGGCAGCACCGGCCTGCCCAAGGGCGTCGCCCTGCCCCACAGAACCGCCTGCGTCAGATTTAGCCACGC
CAGAGACCCCATCTTTGGCAACCAGATCATCCCCGACACCGCCATCCTGAGCGTCGTCCCCTTTCACCAC
GGCTTTGGCATGTTTACCACCCTGGGCTACCTGATCTGCGGCTTTAGAGTCGTCCTGATGTACAGATTTG
AGGAGGAGCTGTTTCTGAGAAGCCTGCAGGACTACAAGATCCAGAGCGCCCTGCTGGTCCCCACCCTGTT
TAGCTTTTTTGCCAAGAGCACCCTGATCGACAAGTACGACCTGAGCAACCTGCACGAGATCGCCAGCGGC
GGCGCCCCCCTGAGCAAGGAGGTCGGCGAGGCCGTCGCCAAGAGATTTCACCTGCCCGGCATCAGACAGG
GCTACGGCCTGACCGAGACCACCAGCGCCATCCTGATCACCCCCGAGGGCGACGACAAGCCCGGCGCCGT
CGGCAAGGTCGTCCCCTTTTTTGAGGCCAAGGTCGTGGACCTGGACACCGGCAAGACCCTGGGCGTCAAC
CAGAGAGGCGAGCTGTGCGTCAGAGGCCCCATGATCATGAGCGGCTACGTCAACAACCCCGAGGCCACCA
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TTTTATCGTGGACAGACTGAAGAGCCTGATCAAGTACAAGGGCTACCAGGTCGCCCCCGCCGAGCTGGAG
AGCATCCTGCTCCAGCACCCCAACATCTTTGACGCCGGCGTCGCCGGCCTGCCCGACGACGACGCCGGCG
AGCTGCCCGCCGCCGTCGTCGTCCTGGAGCACGGCAAGACCATGACCGAGAAGGAGATCGTGGACTACGT
CGCCAGCCAGGTCACCACCGCCAAGAAGCTGAGAGGCGGCGTCGTCTTTGTGGACGAGGTCCCCAAGGGC
CTGACCGGCAAGCTGGACGCCAGAAAGATCAGAGAGATCCTGATCAAGGCCAAGAAGGGCGGCAAGAGCA
AGCTG**TAA**TCTAGA

Amino acid sequence

AWQSGTVGKAT**M**EDAKNIKKGPAPFYPLEDGTAGEQLHKAMKRYALVPGTIAFTDAHIEVNITYAEYFEM
SVRLAEAMKRYGLNTNHRIVVCSENSLQFFMPVLGALFIGVAVAPANDIYNERELLNSMNISQPTVVFVS
KKGLQKILNVQKKLPIIQKIIIMDSKTDYQGFQSMYTFVTSHLPPGFNEYDFVPESFDRDKTIALIMNSS
GSTGLPKGVALPHRTACVRFSHARDPIFGNQIIPDTAILSVVPFHHGFGMFTTLGYLICGFRVVLMYRFE
EELFLRSLQDYKIQSALLVPTLFSFFAKSTLIDKYDLSNLHEIASGGAPLSKEVGEAVAKRFHLPGIRQG
YGLTETTSAILITPEGDDKPGAVGKVVPFFEAKVVDLDTGKTLGVNQRGELCVRGPMIMSGYVNNPEATN
ALIDKDGWLHSGDIAYWDEDEHFFIVDRLKSLIKYKGYQVAPAELESILLQHPNIFDAGVAGLPDDDAGE
LPAAVVVLEHGKTMTEKEIVDYVASQVTTAKKLRGGVVFVDEVPKGLTGKLDARKIREILIKAKKGGKSK
L***SR**

JNC CORPORATION

Cat. No. P-005

pJN-opPyLuc (4,362 bp)

GCGCCCAATACGCAAACCGCCTCTCCCCGCGCGTTGGCCGATTCATTAATGCAGCTGGCACGACAGGTTT
CCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAATGTGAGTTAGCTCACTCATTAGGCACCCCAGG
CTTTACACTTTATGCTTCCGGCTCGTATGTTGTGTGGAATTGTGAGCGGATAACAATTTCACACAGGAAA
CAGCTATGACCATGATTACGCCAAGCTGCAAGCTTGGCAATCCGGTACTGTTGGTAAAGCCACC**ATG**GAG
GACGCCAAGAACATCAAGAAGGGCCCCGCCCCCTTTTACCCCCTGGAGGACGGCACCGCCGGCGAGCAGC
TGCACAAGGCCATGAAGAGATACGCCCTGGTCCCCGGCACCATCGCCTTTACCGACGCCCACATCGAGGT
CAACATCACCTACGCCGAGTACTTTGAGATGAGCGTCAGACTGGCCGAGGCCATGAAGAGATACGGCCTG
AACACCAACCACAGAATCGTCGTGTGCAGCGAGAACAGCCTCCAGTTTTTTATGCCCGTCCTGGGCGCCC
TGTTTATCGGCGTCGCCGTCGCCCCCGCCAACGACATCTACAACGAGAGAGAGCTGCTGAACAGCATGAA
CATCAGCCAGCCCACCGTCGTCTTTGTCAGCAAGAAGGGCCTCCAGAAGATCCTGAACGTCCAGAAGAAG
CTGCCCATCATCCAGAAGATCATCATCATGGACAGCAAGACCGACTACCAGGGCTTTCAGAGCATGTACA
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CAAGACCATCGCCCTGATCATGAACAGCAGCGGCAGCACCGGCCTGCCCAAGGGCGTCGCCCTGCCCCAC
AGAACCGCCTGCGTCAGATTTAGCCACGCCAGAGACCCCATCTTTGGCAACCAGATCATCCCCGACACCG
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TGAGCAACCTGCACGAGATCGCCAGCGGCGGCGCCCCCCTGAGCAAGGAGGTCGGCGAGGCCGTCGCCAA
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CGCCGGCCTGCCCGACGACGACGCCGGCGAGCTGCCCGCCGCCGTCGTCGTCCTGGAGCACGGCAAGACC
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GATCAAGGCCAAGAAGGGCGGCAAGAGCAAGCTG**TAA**TCTAGAGGATCCCCGGGAATTGCGGAATTCCGC
AATTCACTGGCCGTCGTTTTACAACGTCGTGACTGGGAAAACCCTGGCGTTACCCAACTTAATCGCCTTG
CAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTT
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GATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCAGCCGAACGACCGAGCGCAGCGAGT
CAGTGAGCGAGGAAGCGGAAGA

Residue	Sourse	Comments
1-245	1-245	pUC-JN backbone(pUC9 derivative)
1-230	1-230	lac promoter/operator
275-1,924	1-1,650	Codon-optimized PyLuc ORF
1,928-4,362	294-2,728	pUC-JN backbone(pUC9 derivative)
4,189	2,555	ori: Origin of replication
2,561-3,421	927-1,787	Amp^r: Ampicillin resistance gene

JNC CORPORATION

Cat. No. P-005

Restriction enzyme sites of pJN-opPyLuc

Indication Mode: 5'Terminal of the Site

Enzyme	Sequence	Count	Start Position				
AccI	GT!MKAC	0					
ApaI	GGGCC!C	1	301				
Asp718I	G!GTACC	0					
BamHI	G!GATCC	1	1934				
BclI	T!GATCA	5	855	1323	1461	1596	1890
BglII	A!GATCT	0					
EcoRI	G!AATTC	1	1952				
EcoRV	GAT!ATC	0					
HindIII	A!AGCTT	1	240				
KpnI	GGTAC!C	0					
MluI	A!CGCGT	0					
NcoI	C!CATGG	1	273				
NdeI	CA!TATG	1	2173				
NheI	G!CTAGC	0					
NotI	GC!GGCCGC	0					
PstI	CTGCA!G	1	1103				
SacI	GAGCT!C	0					
SalI	G!TCGAC	0					
ScaI	AGT!ACT	2	438	2865			
SmaI	CCC!GGG	1	1939				
XbaI	T!CTAGA	1	1928				
XhoI	C!TCGAG	0					

Supplier	Contact us
JNC CORPORATION Shin Otemachi Bldg. 9F 2-2-1 Otemachi, Chiyoda-ku, Tokyo 100-8105 URL http://www.jnc-corp.co.jp	**JNC Corporation, Yokohama Research Center** 5-1 Okawa, Kanazawa-ku, Yokohama, Japan 236-8605 Tel: 045-786-5501 Fax: 045-786-5511 E-mail: jphoton@jnc-corp.co.jp

JNC CORPORATION

SAFETY DATA SHEET

According to JIS Z 7253:2012

Creation Date 01-Aug-2016

Revision Date

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product name	pJN-opPyLuc
Product code	P-005

Recommended uses and restrictions on use For research purposes

Manufacturer
JNC CORPORATION,Yokohama research Center
5-1, Okawa, Kanazawa-ku, Yokohama 236-8605, Japan
Phone: +81-45-786-5501
Fax: +81-45-786-5511

Supplier
JNC CORPORATION
Shin Otemachi Bldg., 2-2-1 Otemachi, Chiyoda-ku, Tokyo 100-8105
Phone: +81-3-3243-6330
Fax: +81-3-3243-6363

Emergency telephone number +81-45-786-5501

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

・Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Pictograms

・none

Signal word

・none

Hazard statements

・Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Precautionary statements-(Prevention)

・Not applicable

Precautionary statements-(Response)

・Not applicable

Precautionary statements-(Storage)

・Not applicable

Precautionary statements-(Disposal)

・Not applicable

Others

Other hazards

・Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical Name	Weight-%	Molecular weight	EC No.	ISHL No.	CAS No.
EDTA	<0.1%	292.24	200-449-4	N/A	60-00-4

Section 4: FIRST AID MEASURES

Inhalation
Remove to fresh air. If symptoms persist, call a physician.
Skin contact
Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.
Eye contact
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.
Ingestion
Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.
Protection of first-aiders
Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing media
Water spray (fog), carbon dioxide (CO_2), Foam, Extinguishing powder, Sand
Unsuitable extinguishing media
No information available
Special extinguishing method
No information available
Specific hazards arising from the chemical product
Thermal decomposition can lead to release of irritating and toxic gases and vapors.
Protection of fire-fighters
Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.
Environmental precautions
To be careful not discharged to the environment without being properly handled waste water contaminated.
Methods and materials for contaminent and methods and materials for cleaning up
Do not touch spilled material without suitable protection(See section 8). After material is completely picked up, wash the spill sit e with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or di spose of contaminated clothing.
Recoverly, neutralization
No information available
Secondary disaster prevention measures
Clean contaminated objects and areas thoroughly observing environmental regulations.

Section 7: HANDLING AND STORAGE

Handling
Technical measures
Avoid contact with strong oxidizing agents. Use with local exhaust ventilation.
Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

Safety handling precautions

Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Storage

Safe storage conditions

Storage conditions	Container protected from light, and store tightly closed in freezer (-20°C).
Safe packaging material	Glass or Plastic container
Incompatible substances	Strong oxidizing agents

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

Exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Personal protective equipment

Respiratory protection	Dust mask
Hand protection	Protection gloves
Eye protection	protective eyeglasses or chemical safety goggles
Skin and body protection	Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Form	
Color	Colorless
Appearance	No data available
Odor	No data available
pH	No data available
Melting point/freezing point	No data available
Boiling point, initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits	
	No data available
Lower：	No data available
Vapour pressure	No data available
Vapour density	No data available
Specific Gravity / Relative density	No data available
Solubilities	Water: soluble
n-Octanol/water partition coefficient:(log Pow)	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity (coefficient of viscosity)	No data available
Dynamic viscosity	No data available

Section 10: STABILITY AND REACTIVITY

Stability

Stability	Stable under the recommendated strage condition
Reactivity	No data available

Hazardous reactions
None under normal processing
Conditions to avoid
Extremes of temperature and direct sunlight
Incompatible materials
Strong oxidizing agents
Hazardous decomposition products
Carbon monooxide (CO), carbon dioxide (CO2), Nitrogen oxides (NOx)

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity	No data available
Skin irritation/corrosion	No data available
Serious eye damage/ irritation	No data available
Respiratory or skin sensitization	No data available
Reproductive cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT-single exposure	No data available
STOT-repeated exposure	No data available
Aspiration hazard	No data available

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity	No information available
Other data	No data available
Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Hazard to the ozone layer	No information available

Section 13: DISPOSAL CONSIDERATIONS

Waste from residues
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated container and contaminated packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14: TRANSPORT INFORMATION

ADR/RID	Not regulated
UN number	-
Proper shipping name:	
UN classfication	
Subsidiary hazard class	
Packing group	
Marine pollutant	Not applicable
IMDG	Not regulated
UN number	-
Proper shipping name:	
UN classfication	
Subsidiary hazard class	
Packing group	
Marine pollutant (Sea)	Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available
IATA	Not regulated
UN number	-
Proper shipping name:	
UN classfication	
Subsidiary hazard class	
Packing group	
Environmentally Hazardous Substance	Not applicable

Section 15: REGULATORY INFORMATION

International Inventories

EINECS/ELINCS	-
TSCA	-

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Not applicable
Industrial Safety and Health Act	Not applicable
Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc	Not applicable
Regulations for the carriage and storage of dangerous goods in ship	Not applicable
Civil Aeronautics Law	Not applicable
Pollutant Release and Transfer Register Law	Not applicable
Export Trade Control Order	Not applicable

Section 16: OTHER INFORMATION

Literature and references

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
GHS Classification is acoording to JIS Z7252(2010). *JIS: Japanese Industrial Standards

End of Safety Data Sheet